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January 1982/$2.00

WEEDS TREES & TURF

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Garden Attractions for Well Designed Golf Courses

Backing up Budgets With Photography

20th ANNIVERSARY ISSUE

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WT&T

Cover: The activity on the floor of the GCSAA Show closely resembles a multi-ring circus with something for everyone. Art by Al Bartow, Cleveland, Ohio.

JANUARY 1982/VOL. 21, NO. 1

WEEDS and TURF
PEST CONTROL
A SECTION OF PEST CONTROL MAGAZINE
JULY 1962

A Guest Editorial by 1961-1962 President of the Northeastern Weed Control Conference
DR. LAWRENCE G. SOUTHWICK
Dow Chemical Co., Midland, Mich.

New Section Answer to Industry Demand for Weed, Turf Data

Control of unwanted vegetation is one of the oldest activities of man, yet the techniques and concepts in general use today are based largely on relatively recent developments. New herbicide discoveries, better knowledge of herbicidal action and selectivity, new concepts in application methods and equipment — all are contributing to an expanding and a more complex industry.

As in usual when a science develops rapidly and practical application becomes more economically profitable, getting the right information to the right people at the right time becomes increasing in importance. This is certainly true with regard to applicators, who need up-to-date use-information, presented clearly, concisely, and correctly to suit the speedy pace of modern American business.

This new section of *Pest Control* magazine will

(Continued on page W-50)

Multibillion Dollar Weed, Turf Market Awaits Informed Diligent Applicator

By J. C. KEDD
President, Redd Industrial Services, Jackson, Mississippi
Past President, National Pest Control Association

ONE OF the best ways for a contract applicator to grow, other than by selling more of his present services, is to add new ones. This is why so many pest control operators, and owners of similar service businesses, have expanded into weed control and turf spraying over the past decade.

Applicators who want to incorporate other pursuits into their present line should make sure their new venture is closely related to the one they're now engaged in. If not, they will have to set up entirely new organizations and consequently defeat their objective: to expand logically and profitably.

PCOs, particularly, want to use their equipment, personnel, and field-gained know-how for additional, related activities. For this reason, many of them have jumped into the booming demand for industrial weed control, and contract turf spraying.

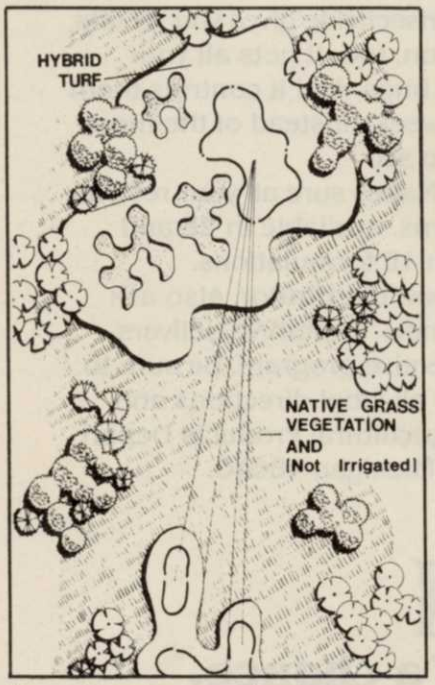
Few markets look more promising right now. Homeowners tend to build $50,000 houses, spend $10,000 decorating inside, and yet only $100 on their lawn and landscape. These folks have not yet been taught that more people see the outside than the inside of their homes. They have not yet been convinced that the outside should have first attention.

Applicators can offer these homeowners a variety of services. Control of such nuisances as chinch bugs, fire ants, fungus, moles, white grubs, fleas, ticks, chiggers, fall army worms, and

Lawn pest control is an important facet of author Redd's business. These fieldmen are treating both grass and ornamentals around a home in Jackson, Miss. Redd is active in industrial weed control, as well as general structural pest control.

WEEDS AND TURF Pest Control Section, July, 1962 W-1

First issue in 1962. P. 23



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WEEDS TREES & TURF (ISSN 0043-1753) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editoral offices: 757 Third Avenue, New York, New York 10017. Advertising offices: 757 Third Avenue, New York, New York 10017, 111 East Wacker Drive, Chicago, Illinois 60601 and 3091 Maple Drive, Atlanta, Georgia 30305. Accounting Advertising Production and Circulation offices: 1 East First Street, Duluth. Minnesota 55802. Subscription rates: United States $15 per year; Canada $18 per year. All other countries: $40 per year. Single copies: $2 in the United States and Canada; all other countries: $4.50. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright ©1982 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

POSTMASTER: Send address changes to WEEDS TREES & TURF, P.O. Box 6198, Duluth, Minnesota 55806-9898.

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WT&T

OUTLOOK

By Bruce F. Shank, Executive Editor

Survey shows where we stand economically

The results of a survey we started in August to find out the effects of the recession on four segments of the landscape market are now tabulated. The results support much of the speculation by landscape managers.

The four markets polled were sod production, landscape contracting, golf course management, and park management. Results are based upon responses from 144 sod producers, 200 golf course superintendents, 160 park managers, and 200 landscape contractors. All were selected randomly from our circulation lists. We thank the participants for their involvement in this important poll.

The sod market is experiencing a business loss of 38 to 50 percent due to a drop in construction starts. Only 14 percent of the sod producers polled said construction had not hurt demand. More than a third of the sod growers have reduced production acreage and 44 percent have reduced prices to spur demand. Nearly 40 percent have converted acreage to another crop until the market returns to normal. Sales to landscape contractors have been cut the most.

To compensate for drop in demand, sod producers have cut back on labor and fertilizer. More than 80 percent say they have delayed equipment purchases due to high interest rates and cut seed purchases by an average of 50 percent. Almost a fourth cited the popularity of new perennial ryegrasses as a factor in reduced sales.

Landscape contractors, however, reported 1981 as a growth year. They do foresee problems in 1982 and some see it as a no growth year. Nearly two thirds of the landscape contractors have delayed purchasing equipment due to interest rates with the same number raising their prices to cover higher interest costs. Half of the respondents have cut credit use to buy equipment and cut credit terms allowed customers. More than 40 percent have avoided use of credit to finance expansions. Half have reduced their number of employees. More than 40 percent have expanded into new types of landscape service to counter rising costs (mainly design and lawn care). A third have moderated growth goals, tightened routing, and used smaller plant material when possible. A fourth have reduced chemical inventories and expanded into new business districts.

Golf course managers have reacted to rising costs as well by raising greens fees and membership dues 10 to 20 percent since 1970. This, however, does not keep pace with inflation. The main areas cut back to control costs are the size of the crew, rebuilding and renovation, size of highly maintained fairway area, irrigation and drainage improvement, and finally, fertilizer applications. All of these were utilized by more than a third of the superintendents. More than half the superintendents have delayed equipment purchases and almost half have reduced chemical inventories. More than half (57 percent) said they have delayed plans for course expansion or improvement. A bright spot is the increase in golf car rental frequency reported by more than two thirds of the superintendents.

The vast majority of park superintendents have not delayed equipment purchases. They are cutting crew size and ornamental plantings and more than a third report reduced fertilizer application, mowing frequency, trimming and edging, and applications of herbicides and insecticides. More than a quarter have increased contracting park work to landscape contractors.

Further cross tabulation will provide more data in future issues. We will pass it on as we continue to work with the data collected. **WTT**

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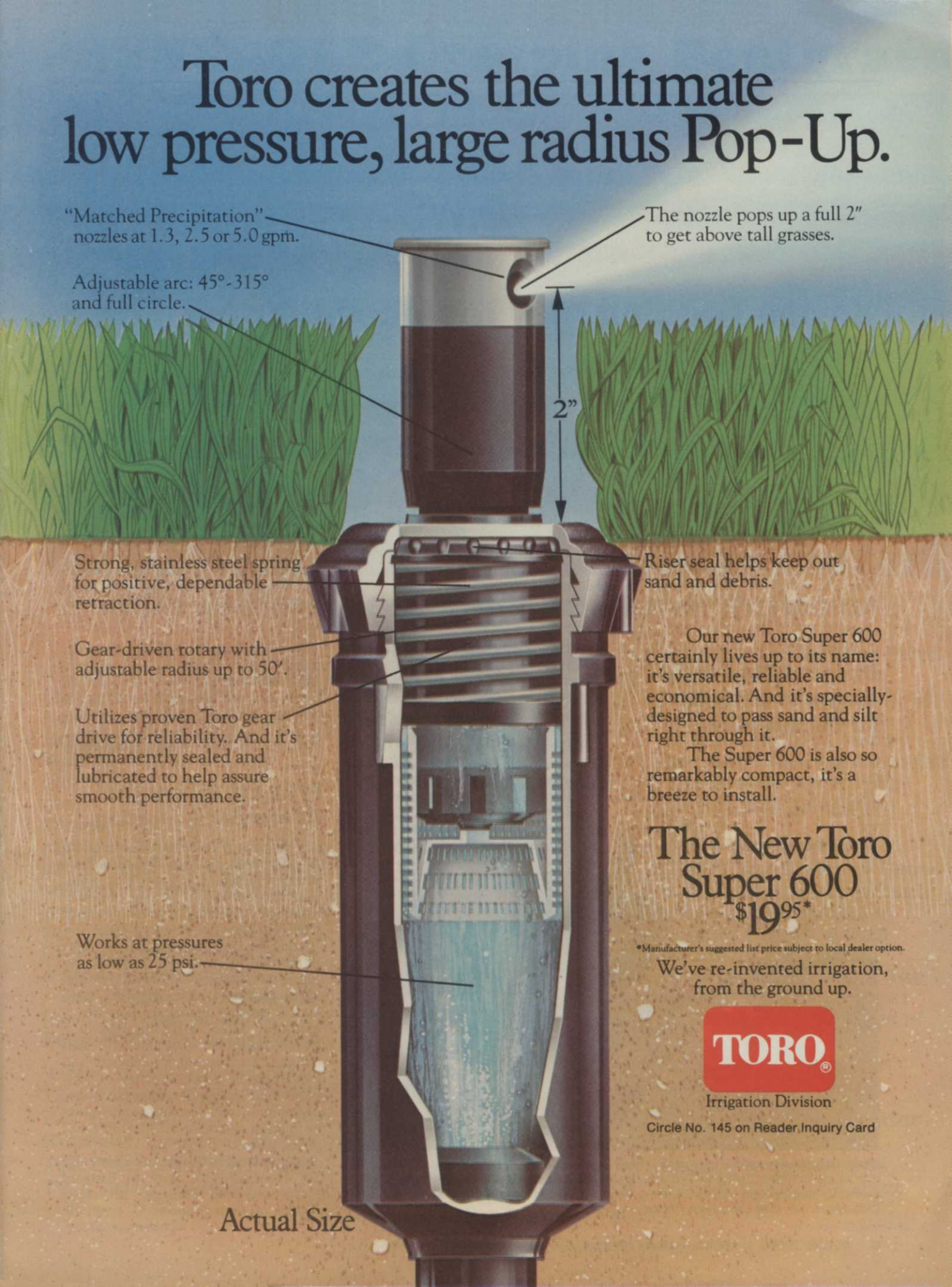

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GREEN INDUSTRY NEWS

SEED

Zoysia seeding may replace plugging

United States Department of Agriculture has discovered a method of propagating zoysiagrass by seed, according to the USDA. The discovery is particularly noteworthy to the turfgrass industry because zoysia's use has previously been limited by its inability to be adequately spread by seed.

Dr. Doyi Yeam and research agronomist Jack Murray first suggested an alternative technique to the traditional "plugging" method of zoysia germination while doing research at the USDA's Beltsville Agricultural Research Center. They found that by soaking seeds in a 34 percent potassium hydroxide (KOH) solution for 25 minutes and then exposing them to 48 hours of low intensity light, they could induce more than 90 percent of the zoysia seed to germinate within six days. Untreated seed takes six weeks to reach 30 percent germination.

The KOH solution breaks the seed coat and eliminates a growth inhibiting enzyme present in the seed, while the low intensity light stimulates rapid and uniform germination, explained Murray.

Zoysia propagated by treated seed was also found to spread at least twice as rapidly than when established by any other method. After only three weeks, 67 percent of the treated seed area was covered by grass, with an average of 218 plants per square foot. Untreated seed, by comparison, had covered only three percent of its area, averaging only seven plants per square foot.

Zoysia works best when applied on bare earth with a smooth roller after drop seeding. Despite the grass's knack for keeping weeds at bay, it performs poorly when seeded into existing turf.

CHEMICALS

Diamond Shamrock earmarks $20 million for Dacthal plant

Diamond Shamrock Corp., Cleveland, OH, has approved funds for the reconstruction of the Agricultural Chemicals division's Dacthal plant in Houston, TX.

Plant reconstruction will begin early in 1982 with the project scheduled to be completed by the end of the 1982 third quarter. The total cost will be in excess of $20 million. Dacthal herbicide is expected to be available for the 1983 growing season.

Engineering work for the plant's reconstruction is already underway. Demolition of the damaged portion of the plant has already been completed.

Dacthal production was halted in July, 1981, when an explosion damaged the Houston plant.

In other Diamond Shamrock news, Kurt Schwartau has been named product manager for the Agricultural Chemicals division. Prior to his promotion, Schwartau was a sales representative in the division's midwest region. He has been with Diamond Shamrock since 1979.

Derby perennial ryegrass, International Seed Co., Halsey, OR, was advertised on a hot air balloon at the Southern California Turf and Landscape Equipment Show. The balloon was co-owned by Bud Franklin, Capitol Nursery, Phoenix, AZ and Gary Harrington, Mesa Country Club, Mesa, AZ. (See Landscape Update on page 11.)

Price cut announced At Ronstar G meeting.

A new, lower price for Chipco Ronstar G herbicide was announced by Rhone-Poulenc Chemical Co., Monmouth Junction, NJ, at its northeast distributor meeting held in Atlantic City, NJ.

New production efficiencies have permitted the average price to be reduced 12 to 14 percent below 1981 levels, according to Gerald Quinn, Ronstar G product manager. "Ronstar G can now effectively compete in a broad range of turf market," said Quinn. "Its ease of application and gentleness to a wide variety of turfgrasses and ornamentals make it one of the most cost effective preemergent herbicides available for the control of grassy weeds."

At the meeting Dr. Ralph Engel and Dr. Henry Indyk, both of Rutgers University-Cook College, presented results of their Ronstar G research.

Continues on page 8

PENNEAGLE Creeping Bentgrass

The grass that re-greened Butler National

A devastating grass disease virtually destroyed the greens at Butler National Golf Club, Oak Brook, Illinois, home of the *Western Open*, shortly before the 1980 tournament. The Butler Board of Directors decided to replace the grass on all greens and after viewing several varieties of bentgrass in the Chicago area, they selected Penneagle Creeping Bentgrass for the restoration program.

Dr. Joseph M. Duich, professor of Turf Science, Penn State University, and developer of Penneagle bent was called in as a consultant. Working closely with Oscar Miles, Course Superintendent, the reseeding of Butler National was begun in mid-August 1980. Before the project was completed, the entire course was seeded to Penneagle Bentgrass.

By November the course was pronounced in excellent condition and by the 1981 Western Open the course drew raves from players and spectators alike.

The TEE-2-GREEN CORP., marketers of Penneagle and Penncross bentgrass has published a booklet complete with photos of the Butler restoration program. The step by step program at Butler is available free of charge.

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GOLF UPDATE

GCSAA Conference Schedule

The 53rd International Golf Course Superintendents Association of America's Turfgrass Conference and Show in New Orleans, January 30 — February 5, is chock full of events, seminars and meetings. The following is *Weeds Trees & Turf's* guide to what is happening and when it is being held.

Monday, February 1
- 7:30 Prayer Meeting
- 9:00 Opening Session — Keynote Address
- 10:30 Newsletter Editors' Reception
- 11:00 Press & Speakers' Luncheon
- 12:00 Spouses' Opening Luncheon
- 1:00 Water Symposium I
- 1:00 Distributor Show Review
- 2:30 Spouses' CPR
- 4:30 Meet The Candidates
- 5:30 Mardi Gras Reception

Tuesday, February 2
- 7:30 New Member Orientation
- 9:00 Ribbon Cutting Ceremony
  Show Officially Opens
- 9:30 Certification Committee Meeting
- 10:00 Spouses' Tours
- 11:00 Membership: Long-Range Planning Briefing
- 12:00 Voting Delegates' Luncheon
- 1:00 Water Symposium II
- 4:30 Membership: Long-Range Planning Briefing
- 6:00 EAC Dinner Meeting

Wednesday, February 3
- 7:30 President's Council Breakfast
- 9:00 USGA Green Section Program
- 9:00 Spouses' Program
- 10:30 Spouses' Program
- 12:00 Education Committee Luncheon Meeting
- 1:00 USGA Green Section continues
- 3:00 GCSAA Annual Meeting
- 6:00 President's Reception (By Invitation)

Thursday, February 4
- 7:30 Executive Committee Breakfast
- 9:00 E.F. Hutton
- 10:15 Thinking Superintendent
- 10:15 Course Drainage
- 11:00 Putting Green Speed
- 1:30 Communications
- 2:00 Show Officially Closes
- 2:45 Thinking Superintendent
- 2:45 Tree Management
- 2:45 Golf Cart Management
- 4:30 IRC Meeting
- 6:00 Banquet Reception
- 7:00 GCSAA Annual Banquet & Show

Friday, February 5
- 9:30 Superdome Tour

GCSAA publishes its Proceedings of the show each year. If you must miss the conference, write GCSAA for the 1982 Proceedings, GCSAA Director of Education, 1617 St. Andrews Drive, Lawrence, KS 66044.

News *from page 6*

Engel noted that the three pound rate, especially when applied in late April, was effective, "Ronstar G is one of the most effective preemergent herbicides," said Engel. Indyk reported that previous complaints of poor results with Ronstar G were traced to improper technique of application. "It stands alone in the treatment of goosegrass," added Indyk.

GOVERNMENT

New lawn mower regulation approved

Yielding to an order from Congress, the Consumer Product Safety Commission has rewritten its regulation on power lawn mowers.

Due to the new regulation, the mower's engine will shut off whenever the operator is not holding the handle. This makes it virtually impossible for an operator to get his hand caught in the mower blade yet adds the inconvenience of restarting the engine repeatedly.

The Outdoor Power Equipment Institute lobbied for the new regulation over a 1979 version. The earlier version would have required the blade to stop without killing the engine when the operator lets go of the handle. OPEI noted that that version would have added $60 to mower prices.

TURF

Grounds managers turn out for PGMS conference

The Pacific Northwest was the site for the 69th annual conference and trade show of the Professional Grounds Management Society and the more than 140 attendees made the most of both the Portland, OR locale and the conference program.

Many of the grounds managers attending played the host city for all it was worth—visiting Mt. St. Helens, the International Rose Test Gardens and Japanese Gardens and some of Portland's commercial nursery operations. While the number of attendees was down slightly from years past, the enthusiasm and involvement of this year's group more than compensated.

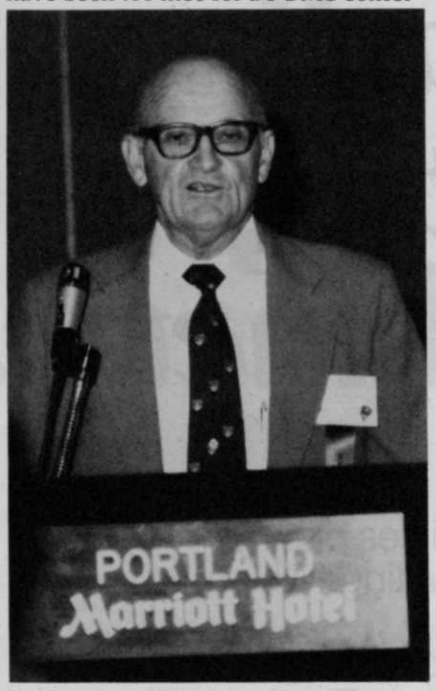
Seminars were divided into three sections—management, design and technical—and all were well-attended. Sandra Entrekin, Interact Resource and Development Center, and Dr. Roy Goss, Washington State University, proved to be two of the most popular speakers. Entrekin's talk on "From the

Continues on page 11

News *from page 8*

ground up—Design the management landscape" and Goss' seminars on turf grasses and turf nutrition were presented to packed auditoriums of over 110 grounds managers.

If anything, the Portland locale might have been *too* nice for a PGMS conference. Some of the attendees told *WTT* that they were dismayed at the lack of problems that the Pacific Northwest seemed to be encountering. Next year's conference and trade show will be held in San Diego, CA, November 14-18. A record turnout is expected.



Dr. Roy Goss, Washington State University, conducted at seminar on new turfgrasses and their characteristics at the PGMS conference in Portland, OR.

New York conference draws 700 to Albany

Despite competition from hunting season, the PLCAA Show, and last minute problems with the conference hotel, the New York State Turfgrass Association Conference and Trade Show attracted nearly 700 turf managers to Albany's modern Empire State Plaza.

Educational sessions were divided into lawn care, golf, and athletic field management. General sessions covered turf and landscape topics and featured regional experts such as Cornell's Paine on weather forecasting, Rhode Island's Jagschitz on growth regulators, Rutger's Indyk on athletic field construction and maintenance, Cornell's Smiley on diseases, Bing on weeds, Petrovic on turf management, and Tashiro on insects.

Continues on page 13

LANDSCAPE UPDATE

ALCA Maintenance Symposium stresses salesmenship

Steve Brown, president of The Fortune Group, set the mood for ALCA's Maintenance Symposium with an upbeat presentation on effective management. "Management is the skill of attaining predetermined objectives," Brown noted. "The only thing that matters is results." With the stage set, the approximately 150 landscape contractors heard presentations on marketing potential, budgeting and forecasting, selling and equipment costing.

The marketing potential seminar was run by Ken and Tom Oyler, Oyler Brothers Co., Orlando, FL, and Ray Gustin, Gustin Gardens, Gaithersburg, MD. They discussed marketing techniques that have been successful in their businesses. Richard Reasoner, Dendron, Novato, CA, presented the seminar on how to forecast sales and budget accordingly. Phil Christian, division manager, ChemLawn Corp., conducted the equipment costing presentation. Christian provided the audience with various equations to ascertain their own equipment profitability.

Irv Dickson's (ChemLawn) seminar on "Successful Selling Methods" picked up where Brown left off. Dickson stressed that "the difference between success and failure in sales is having the right attitude." Dr. Robert Miller, vice president of group support services, ChemLawn, was the featured speaker at the luncheon. Miller, also a member of the National Coalition For A Reasonable 2,4-D Policy, spoke on the effects of chemicals in our world.

In other ALCA news, the association released its program for its 1982 Annual Meeting. The meeting will be held in Palm Springs, CA, January 25-29. The theme is "Winning in the 1980's" and Ed Foreman and Earlene Vining will kick off the meeting with presentations on "Successful Living" and "The Art of Successful Selling." Other noted speakers will be Jerry Lankenau, "How to Get the Government Off Your Back and On Your Side;" McNeil Stokes, "Contract Negotiating;" and David Bowen, "Cash Flow Management."

There will be an expanded trade exhibit and the 12th annual presentation of the Environmental Improvement Awards. A full program for the interior landscape industry is also planned.

SC Turf and Equipment Show draws over 6,800

The Southern California Turf and Landscape Equipment Show held at the Orange County Fairgrounds, Costa Mesa, CA, was attended by more than 6,800 industry personnel and students. The show is the largest in the west and features more than 150 commercial exhibits and educational displays by seven community colleges and universities.

Fullerton College, Fullerton; Cal Poly University, Pomona; and Cuyammacco College, San Diego; placed first, second and third, respectively, as the three schools best training future leaders for the turfgrass industry. Several of the exhibits attracted quite a bit of attention from the attendees. B. Hayman Co., Sante Fe Springs, featured an antique power mower which still runs. Environmental Care's (Santa Ana) display featured an early model Ford pick-up truck. The hot air balloon advertising International Seed Co.'s Derby perennial ryegrass was one of the favorite attractions.

Additionally, the Southern California Turfgrass Council set plans for its 1982 Turf and Landscape Institute to be held in Anaheim, May 4-5. Seminars are planned for landscape, golf, water and energy, pest management and personnel management.

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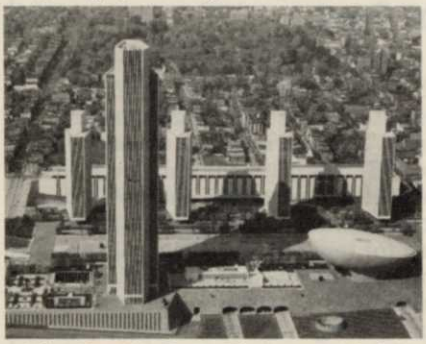
Specialty topics included drought and water management, ground water contamination, insecticide-related bird kill, small computers, and preventative pest management. Representatives from regional organizations chaired the sessions such as Frank Claps of the New York Turf and Landscape Association, Robert Miller of the Central New York Golf Course Superintendents Association, Gregory Davis of the Western New York Golf Course Superintendents Association, Robert Alonzi of the Metropolitan Golf Course Superintendents Association, and James Carnevale of the Nassau-Suffolk Landscape Gardeners Association. James Wyllie, vice president of the Golf Course Superintendents Association of America and probable 1982 president of GCSAA, spoke on new construction.

Richard McGovern, president of McGovern Sod Farms, was chairman of the conference and ironed out last minute problems with the Hilton which failed to get an occupancy permit in time for the show. Jerry Strein of Greenview Nursery, South Hempstead, took over the NYSTA presidency from Thomas Strain of Vestal Hills Country Club, Elmira. Bruce Shank, of *Weeds Trees & Turf* magazine, was elected to a three-year term on the board and appointed chairman of the long range planning committee.



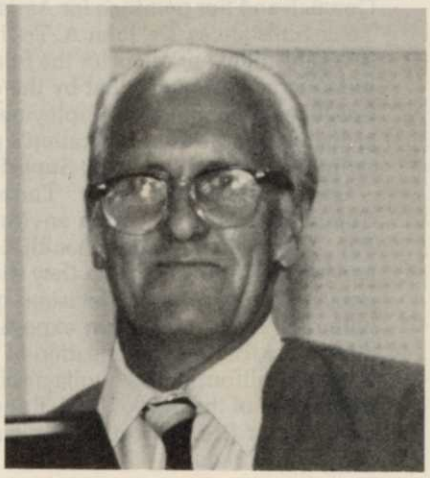
The Empire State Plaza provided an attractive and efficient location for a trade show. The 1982 will return to Albany and the conference hotel will be the nearby Hilton, which received its occupancy permit on the final day of the NYSTA show.

TURFGRASS

Youngner honored at West Coast show

Dr. Victor Youngner was named "Man of the Year" at the Southern California Turf and Equipment Exposition, Costa Mesa, CA.

Youngner, professor of plant science at the University of California, Riverside, is an internationally recognized turfgrass breeder, educator, and turfgrass scientist. Youngner is credited with developing the smog resistant hy-

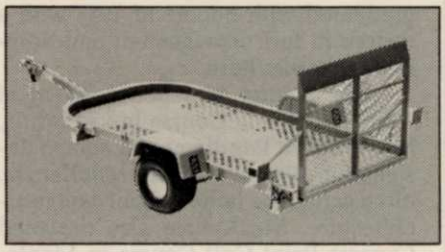


brid bermudagrass cultivar, Santa Ana. He is currently developing and evaluating several improved zoysiagrass cultivars which show potential for being both energy and water efficient.

Continues on page 14

Bigger Specs for Bigger jobs.

Introducing the 4200 lb. capacity Trailer from Snowco.



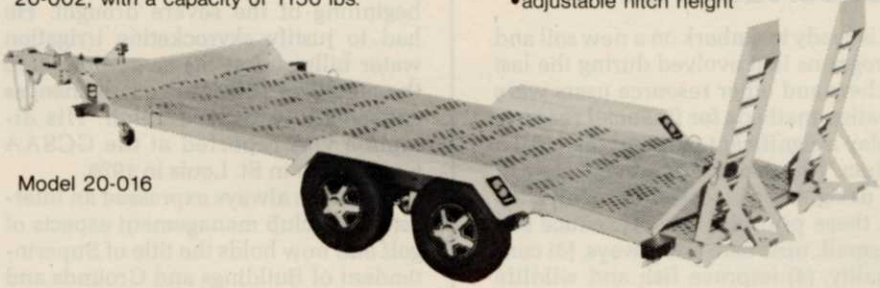
Snowco offers a broad selection of ramp, tilt and box trailers, with capacitities from 1000 lbs. to 4200 lbs. Shown here, Snowco's ramp loading utility trailer Model 20-002, with a capacity of 1150 lbs.

Snowco built their reputation on sturdy dependable trailers. Their big new 4200 lb. capacity utility trailer has the same top-quality construction that makes every Snowco trailer rugged and practical. This newest trailer is ideal for hauling grounds maintenance equipment, construction equipment, ditchers, and other bulky, hard-to-handle loads.

Standard equipment includes:
- heavy-duty steel deck
- adjustable loading ramps
- hydraulic brakes
- mag wheel covers
- screw-jack tongue stand
- adjustable hitch height

Snowco's lo-ride suspension system makes loading easy **and** lowers the center of gravity for maximum stability and safety at legal highway speeds. What's more, the big new 4200 lb. capacity trailer is backed by the reliable Snowco Warranty.

No matter what your hauling needs, Snowco's new top-of-the-line trailer can handle it...at a big 4200 lbs.



Model 20-016

Snowco
Division of Beatrice Foods Co.
4386 McKinley, Omaha, NE 68112

Please send more information on your complete utility trailer line.

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Organization _____
Address _____
Phone _____
City _____ State _____ Zip _____

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GOVERNMENT UPDATE

EPA Officials on the Hot Seat

On two successive days in October, the U.S. Senate Environment and Public Works Committee grilled the EPA administrator, Anne M. Gorsuch and her nominee for Assistant Administrator for Pesticides and Toxic Substances, Dr. John A. Todhunter. Mrs. Gorsuch was questioned severely about her plans for the future of EPA because the onboard EPA bureaucracy estimates that by the end of fiscal year 1983, there will be less than half of the 1981 employment level (around 10,000). She was also grilled about the Administration's plan for rewriting the Clean Air Act, failure to do anything about Superfund, and the low morale in EPA.

On the next day at Dr. Todhunter's nomination hearings, the Committee, with help from environmental organizations, unloaded on him. They were critical of health risk decisions made during his consultant status with EPA since they differed widely from previous agency policy. Of note were the decisions on formaldehyde and the controversy within EPA on the human exposure levels due to the use of ethylene dibromide (EDB) for fumigation of food crops in the Medfly quarantine areas of California. His public disclosure earlier this year about the EPA suspension of the uses of 2,4,5-T and silvex on insufficient evidence also came under fire. However, he was easily approved by the Committee and the full Senate.

More Pesticides for the Nursery Industry

A concerted effort by the American Association of Nurserymen, the National Forest Products Association and the Society of American Florists has given the nursery industry quicker access to new and effective pesticides. The cost of acquiring registration data has been so great that a manufacturer often did not register low volume uses until years after a chemical was registered for a major agricultural crop.

The three organizations made their problem known at the 1981 Congressional Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) oversight hearings. They requested the insertion of a new definition in FIFRA that would make "applying a pesticide, registered for use on a food crop, to any non-food or non-feed nursery crop against any target pest specified on the labeling, unless such use is specifically prohibited on the labeling" not inconsistent with its labeling. In subsequent meetings with the House Agricultural Committee staff and EPA, a method was found to resolve the nurserymen's problem without making a change in the Act. Under existing statutory authorities, EPA proposed that the following uses are not inconsistent with labeling: (1) a pesticide registered for use on a specific ornamental plant can be used on all ornamental plants; (2) a pesticide registered for use in greenhouses can be used on all non-food plants grown in greenhouses; and (3) general or unclassified use pesticides registered for use on food crops may be used on non-food or non-feed nursery sites. In all three all label directions, precautions, and restrictions must be followed.

This new policy would make about 85% of the registered pesticides available to the nurserymen.

New Soil and Water Conservation Ethic

The U.S. Department of Agriculture is ready to embark on a new soil and water conservation program. The programs that evolved during the last 45 years assumed that farmers, ranchers and other resource users were motivated to practice sound conservation methods for financial reasons. Today, other factors in agriculture play a significant part and the USDA has decided to shift away from random 'first-come, first served' style of practice selection to one of priority designations worked out with state and county organizations. In order, these priorities are: (1) reduce soil erosion, (2) reduce flood damage in small, upstream waterways, (3) conserve water and enhance water quality, (4) improve fish and wildlife habitat and (5) increase the use of organic waste.

News *from page 13*

GOLF

Musser tournament raises over $2000

Over $2000 was raised for turf research through the Musser International Turfgrass Foundation at the Eighth Annual Oregon Musser Tournament.

Winner of the 18 hole tournament was a Salem team of Ray Anderson, Bob Renaud, Bill Burgher and Ed Radigan who won tickets for a free flight over Mt. St. Helens. Tualatin Country Club donated free green fees and the Tee-2-Green Corp. sponsored the evening banquet.

With 64 players entered this year, two women joined the fray for the first time.

Prusa takes on GCSAA training job

The new education director of the Golf Course Superintendents Association of America represents both the old and the new for superintendents.

Having grown up on Aquamarine Golf Club in Avon Lake. OH, where his father is superintendent, he was exposed to the methods of the 50's and 60's. Unlike others growing up in this rather rebellious time, he was captivated by his father's occupation.

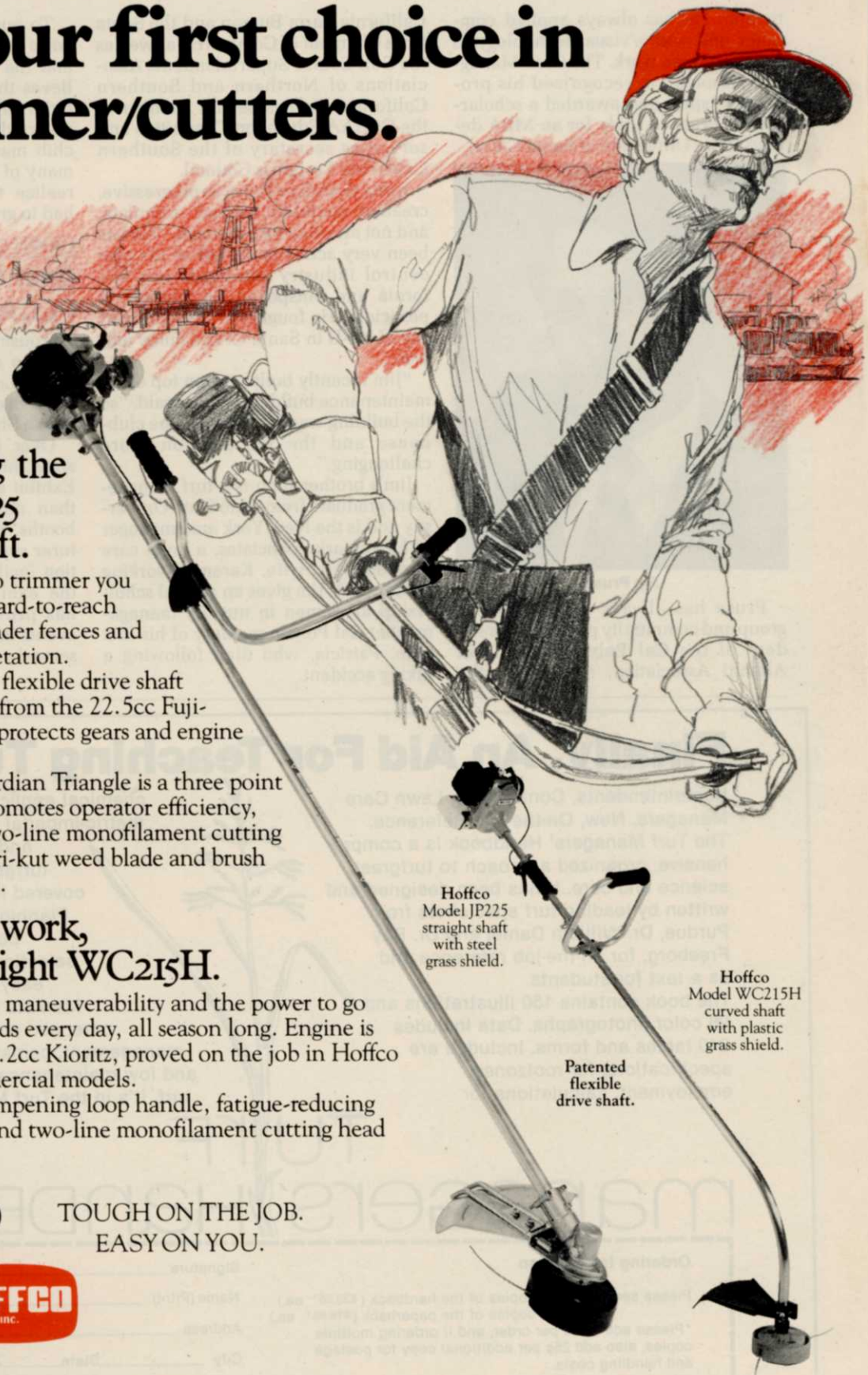
After a tour in the Navy, he pursued a horticulture degree from Orange Coast Community College in Costa Mesa, CA., and California State Polytechnic Institute in Pomona. GCSAA recognized Prusa as a student at Cal Poly with a scholarship. He was Kent Kurtz's technician for turf research. He graduated with honors in 1975 with a degree in turf management and ornamental horticulture.

After serving as superintendent at China Lake Golf Course in California, he moved to Pasatiempo, a course designed in 1927 by Allistair MacKenzie, often called the father of golf course architecture. MacKenzie also designed Cypress Point Golf Course in Monterey, CA, and Augusta National in Atlanta, GA, with Bobby Jones. Prusa took the job as superintendent at the beginning of the severe drought. He had to justify skyrocketing irrigation water bills and at the same time help the members adjust to course changes caused by water reduction. His dilemma was reported at the GCSAA Convention in St. Louis in 1979.

Prusa has always expressed an interest in the club management aspects of golf and now holds the title of Superintendent of Buildings and Grounds and acting General Manager of Pasa-

Continues on page 16

Now, a second choice in shafts for your first choice in trimmer/cutters.



Introducing the Hoffco JP225 straight shaft.

It's the Hoffco trimmer you wanted for those hard-to-reach jobs like cutting under fences and pruning dense vegetation.

Our patented flexible drive shaft delivers full power from the 22.5cc Fujirobin engine, also protects gears and engine from shock loads.

Hoffco's Guardian Triangle is a three point suspension that promotes operator efficiency, comfort, safety. Two-line monofilament cutting head is standard; tri-kut weed blade and brush blades are optional.

For lighter work, our lightweight WC215H.

It's got reach, maneuverability and the power to go after grass and weeds every day, all season long. Engine is the dependable 21.2cc Kioritz, proved on the job in Hoffco professional/commercial models.

Vibration-dampening loop handle, fatigue-reducing shoulder harness and two-line monofilament cutting head all come standard.

Hoffco Model JP225 straight shaft with steel grass shield.

Hoffco Model WC215H curved shaft with plastic grass shield.

Patented flexible drive shaft.

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EASY ON YOU.

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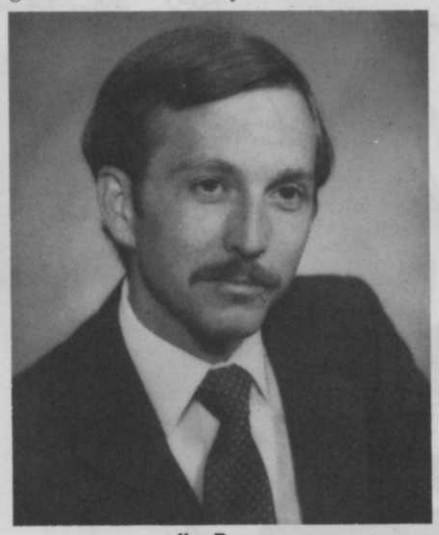
News *from page 14*

tiempo. He has always applied computer and audio/visual technology to his golf course work. The Club Manager's Association recognized his progressive spirit and awarded a scholarship to Prusa to study for an MBA degree at the University of Santa Clara.



Jim Prusa

Prusa has always been active in group and community projects as president of the Cal Poly Horticultural Alumni Association, member of the California Farm Bureau and the Santa Cruz Chamber of Commerce, as well as the Golf Course Superintendents Associations of Northern and Southern California. He has been a member of the GCSAA Education Committee and served as secretary of the Southern California Turfgrass Council.

Kurtz describes Prusa as progressive, creative, confident, poised, articulate, and not afraid to rock the boat. "He has been very active in review of the pest control industry standards in California and outspoken on misuses of pesticides. He fought for the continued use of 2,4-D in Santa Cruz County and won.

"Jim recently built a tee on top of his maintenance building," Kurtz said, "so the building was hidden from the clubhouse and the tee position more challenging."

Jim's brother John is a turf management graduate from Ohio State University and is the New York area manager of Lawnmark Associates, a lawn care company. His wife, Karen is working on her CPA. Jim gives an annual scholarship to women in nursery management at Cal Poly in memory of his first wife, Patricia, who died following a hiking accident.

To summarize, Jim knows the old ways and the new ways, the Midwest and the West ways, and strongly believes that the superintendent should build on his base of expertise into computers, design updating, and even some club management. It may have been many of his ideas that helped GCSAA realize that its educational program had to grow.

LAWN CARE

Over 800 attend PLCAA convention

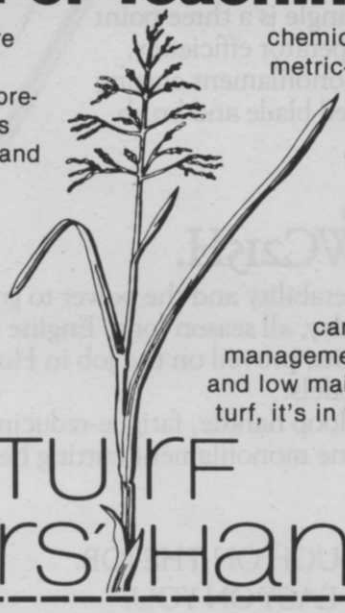
A rousing success may be the only way to describe this year's Professional Lawn Care Association of America Second Annual Convention and Trade Show.

Over 800 people took part in the show, held this year in Louisville, KY. Exhibit space at the trade show more than doubled from last year to 144 booths. With the increased manufacturer support and the upscale convention facilities (carpeting was added to the exhibit floor), the PLCAA show has proved to be one of the major events in the green industry in only its second year.

Continues on page 18

Finally, An Aid For Teaching Turfgrass

Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference. The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students.
The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for chemical applications, and extensive metric-imperial conversion. Business and technical aspects of turfgrass management are covered in this 424-page book. Planning, purchasing, hiring, construction, and plant selection are put together for easy on-the-job reference. Markets covered include lawn care, sod production, golf course management, cemeteries, athletic fields, and low maintenance areas. If it concerns turf, it's in the Turf Managers' Handbook.



TURF managers' HANDBOOK

Ordering Information

Please send _____ copies of the hardback ($23.95* ea.)
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*Please add $2.50 per order, and if ordering multiple copies, also add 25¢ per additional copy for postage and handling costs.

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HBJ

WTT 12

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But standard belts are only part of National's value. There's the normal maintenance factor which is reduced by National's obviously easy accessibility. Field reports tell us that **National mowers are one-third to one-half the cost** of maintaining competitive models.

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Best of all, **National's initial cost is less** than that of other mowers sold to do the same job.

In these days when purchase price, fuel economy, continuous performance and longevity are most important, look to a National to do more work, with easier and faster maintenance, over a longer period.

Model 84" Triplex

Write to us for the name of your nearest dealer. Then call for a demonstration.

Model 68" Triplex

There's more to make you forget about down time

We still cut our own gears, forward, reverse and differential, out of solid steel blanks. These durable gears, carborized, hardened and tempered, are heavier than those used in many automobiles today.

Bed knives have upturned lips for extra wear and longer service. It prevents scalping and will not allow small objects to enter and damage reels.

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Attendees were treated to three days of informative seminars, workshops and exhibits. The two-hour evening workshops proved to be a well-appreciated innovation of the show. At the workshops, lawn care operators had the opportunity to fire questions at speakers who presented seminars earlier in the day. Both the seminars and workshops were very well-attended.

The show program got off on an inspired note with the keynote address delivered by Ralph Lewis Jr., vice president-coordinator corporate communications, Gulf Oil Corp., Pittsburgh, PA. In a saber-rattling speech, Lewis pointed out the public's lack of knowledge of energy policy and stressed the importance of the relationship of energy, politics and global events.

The first day seminars centered around technical matters such as ornamentals, toxic waste, and lawn care equipment. Business seminars on office management, financial statements, accounting and employee discharge and compensation were the topics of the second day. Updates on herbicides, pesticides, pathology and 2,4-D were also presented.

The active participation of the lawn care operators during the educational program carried over into the trade show, according to many exhibitors. A steady flow of attendee traffic was noticeable during all of the exhibit hours. Additionally, many attendees were not just browsers but stopped at the booths to inquire about the products exhibited.

One of the highlights of the show was a presentation honoring Jerry Faulring (Hydro-Lawn Corp., Gaithersburg, MD) for his hard work and

Jerry Faulring (left) hands PLCAA reigns to Marty Erbaugh.

leadership in serving as PLCAA president for the association's first two years. The board of directors was also voted in, including 1982 president J. Martin Erbaugh (The Lawnmark Corp., Pennisula, PA).

The 1982 PLCAA Convention and Trade Show will be held in Indianapolis, IN, November 14-16.

ARBORICULTURE

Johnson named vice president at Davey Tree

Edward Johnson has been named vice president of field services for the Davey Tree Expert Co., Kent, OH. Johnson will work closely with senior vice president of field services Bert Stamp who is planning to retire this month.

In his new position, Johnson will have overall corporate responsibility for personnel, safety and equipment for total company operations.

Prior to his appointment, Johnson served as operations coordinator in the tree care department. He also served as manager of Parr and Hanson, a Davey subsidiary in Hicksville, NY. He has 26 years of experience in arboriculture and is past president of the New York Arborists Association.

EQUIPMENT

Cal Poly equipment program marks 3rd year

California State Polytechnic University, Pomona, CA, celebrated the third year of turfgrass equipment evaluation program.

The turfgrass equipment is consigned to the university by Clarence McMicken, president of B. Hayman Co., Santa Fe Springs, CA (a turfgrass equipment distributor). Some of the companies involved in the program include Jacobsen, Smithco, National, and OMC-Cushman.

The equipment is shipped crated to the university where the students set it up. Once the equipment is assembled and checked out by the students and Dr. Kent Kurtz, several turfgrass areas are assigned for the evaluation. On-campus areas are agreed upon by Dr. Kurtz and Wayne Smith, supervisor of landscape services for the university. Areas of campus are also utilized such as little league baseball fields and youth soccer fields in neighboring communities. This segment of the program works to the benefit of not only the students, but also the volunteer organization who need assistance with turfgrass care.

The cooperating parent manufacturers have been pleased with the arrangement because it exposes the future turfgrass managers to their equipment. Several design modifications have resulted from this program since the students are critical of problems that may arise from using a particular piece of equipment.

TURFGRASS

NCTC members request research projects

Following a survey of its membership, the Northern California Turfgrass Council Research Committee has identified five areas in which research is desired. These areas are: a mowing height comparison of the most frequently used cultivars of Kentucky bluegrass, perennial ryegrass and fescues under normal institutional fertilizer and watering practices; a cost comparison of seeded versus sodded turf and the development of a cost-benefit ratio per unit area; the alleopathic effects of various turfgrasses such as perennial ryegrass and tall fescue; various aspects of turfgrass irrigation; and the selection and/or development of a fine leaf, slow-growing, and non-nuisance Kikuyugrass.

TURF

Lakeshore promotes Winland to product manager

Joe Winland has been named product manager for turf chemicals at Lakeshore Equipment & Supply Co., Elyria, OH.

Prior to his promotion, Winland served as plant manager and manager of inside sales for Lakeshore. His duties included formulating and technical support. Winland joined Lakeshore in 1976 following a career as a golf course superintendent at Pine Hills Golf Course Hinckley, OH, and Saw Mill Creek Golf Course, Huron, OH, where he was involved in the construction of the course.

As product manager of turf chemicals, Winland will continue his technical support functions, but will also become involved in product development and Environmental Protection Agency registrations.

Continues on page 72

How do you make a great crabgrass herbicide even better for turf?

You cut the price.

About the only thing that could make Chipco® Ronstar® G herbicide better for turf would be to lower the cost. So that's what we've done. Now you can get the superior performance of Ronstar G at a

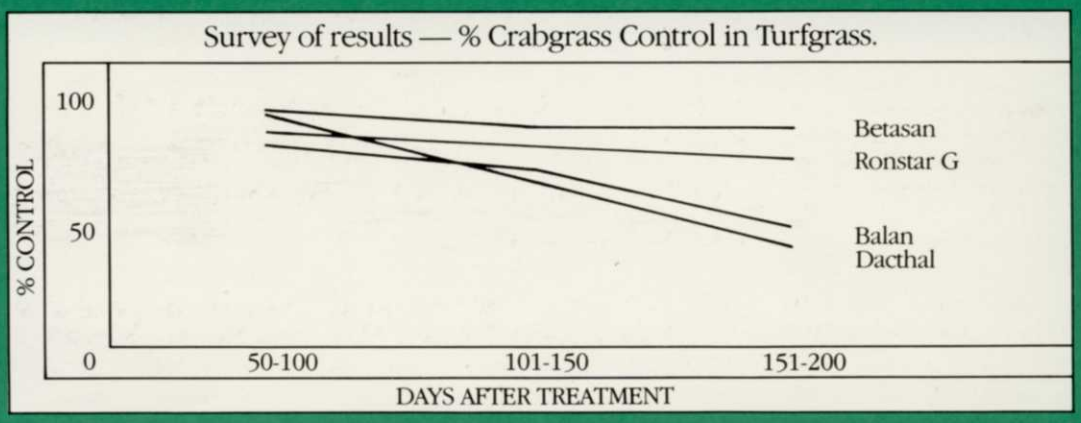
dramatically reduced price.

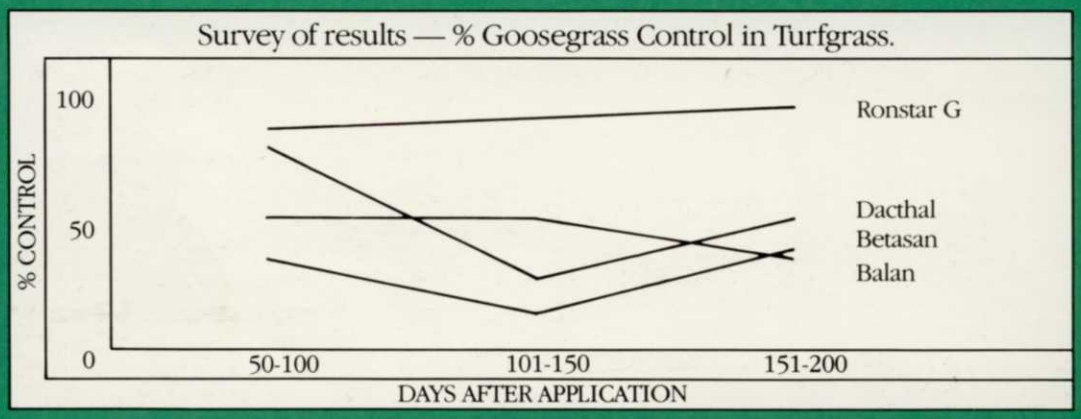
Nothing controls crabgrass and goosegrass better than Ronstar G. And you get this great weed control for the whole season with just one easy, early application.

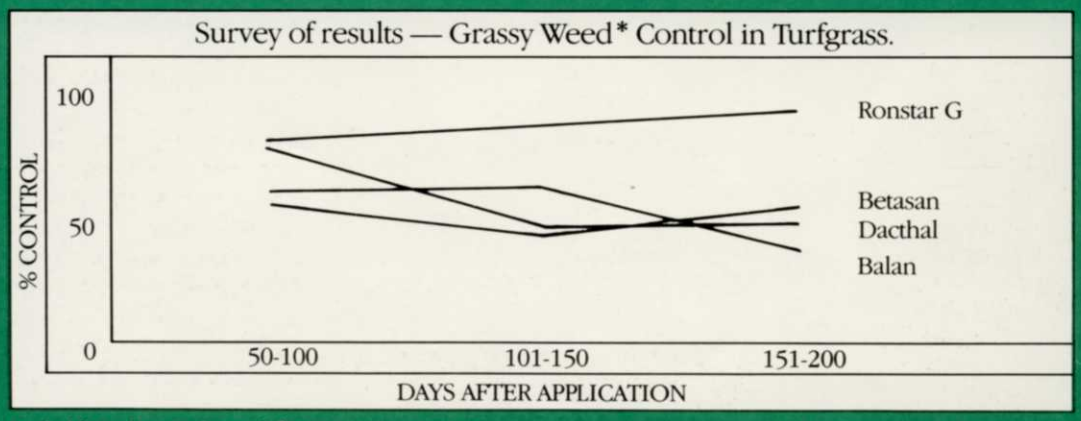
Treat your turf with Ronstar G. The great crabgrass herbicide with the better-than-ever price. Rhône-Poulenc Chemical Co. Agrochemical Div., Rhône-Poulenc, Inc. Monmouth Junction, NJ 08852.

Chipco® Ronstar® G HERBICIDE gives superior control.

As you can see in the following charts, Ronstar G gives effective control of grassy weeds all season long.







In field trials conducted from 1973 to 1977

*Crabgrass and Goosegrass.

With control like this, you can go for a whole season with no complaints, no call-backs.

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Please read label carefully, and use only as directed.

20th ANNIVERSARY

WT&T IS NO LONGER A TEENAGER

Founder cites encouragement of manufacturers, universities and associations in creating a national magazine on vegetation management.

This year marks the 20th anniversary of the conception of today's *Weeds Trees & Turf* magazine. It was in 1962 that the idea for a magazine to serve the professional urban and industrial vegetation management market became a reality.

To get some feel for just how this magazine got started, we interviewed the founder, James A. Nelson of Cleveland, and asked him to reminisce about the early days of the magazine.

Weeds and Turf, as the magazine was called originally, began as a section in *Pest Control* magazine, which was founded in 1933. Nelson recognized a trend among pest control companies to add weed, lawn and tree insect control to their regular structural insect and rodent control service. At that time, there was no reliable source of how-to information to guide professional applicators in identification and control of this separate set of insects, fungi and weeds.

Several unusual facts were discovered in preparation. For one thing, there were all kinds of companies engaged in turf maintenance, weed and brush control, and tree and ornamental care, which had no interest in structural pest control. Also, there was no national magazine that served the specific needs of companies which specialized in contract vegetation management.

Some called themselves horticultural spraymen, some custom applicators, some were nurserymen who offered spray services, and others were arborists who included weed and brush control with their tree spraying services. All had a common need for a national voice and monthly source for how-to information. Altogether, they represented a $4 billion industry.

Authorities on every phase of vegetation management in universities and industry offered encouragement. "Among the specialists who gave us counsel," Nelson recalls, "were toxicologists, research specialists, and authorities from du Pont, Mallinckrodt, Amchem, Diamond Alkali, Ortho, Geigy, Hercules, Monsanto, Stauffer and

Continues on page 24

WEEDS and TURF PEST CONTROL

A SECTION OF PEST CONTROL MAGAZINE

JULY 1962

A Guest Editorial by 1961-1962 President of the Northeastern Weed Control Conference

DR. LAWRENCE G. SOUTHWICK

Dow Chemical Co., Midland, Mich.

New Section Answer to Industry Demand for Weed, Turf Data

Control of unwanted vegetation is one of the oldest activities of man, yet the techniques and concepts in general use today are based ... on relatively recent ... New herbicide ... better knowledge ... action and selectivity concepts in applications and equipment contributing ... and a more ... when a science ... and practice becomes more profitable, get information to ... at the right ... increasing ... is certainly ... and to applicators ... up-to-date ... presented ... and ... the speedy pace ... American business ... section of ... magazine will ... page W-20

Multibillion Dollar Weed, Turf Market Awaits Informed Diligent Applicator

By J. C. REDD

President, Redd Industrial Services, Jackson, Mississippi

Past President, National Pest Control Association

ONE OF the best ways for a contract applicator to grow, other than by selling more of his present services, is to add new ones. This is why so many pest control operators, and owners of similar service businesses, have expanded into weed control and turf spraying over the past decade.

Applicators who want to incorporate other pursuits into their present line should make sure their new venture is closely related to the one they're now engaged in. If not, they will have to set up entirely new organizations and consequently defeat their objective: to expand logically and profitably.

PCOs, particularly, want to use their equipment, personnel, and field-gained know-how for additional, related activities. For this reason, many of them have jumped into the booming demand for industrial weed control, and contract turf spraying.

Few markets look more promising right now. Homeowners tend to build $50,000 houses, spend $10,000 decorating inside, and yet only $100 on their lawn and landscape. These folks have not yet been taught that more people see the outside than the inside of their homes. They have not yet been convinced that the outside should have first attention.

Applicators can offer these homeowners a variety of services. Control of such nuisances as chinch bugs, fire ants, fungus, moles, white grubs, fleas, ticks, chiggers, fall army worms, and

Lawn pest control is an important facet of author Redd's business. These Reddmen are treating both grass and ornamentals around a home in Jackson, Miss. Redd is active in industrial weed control, as well as general structural pest control

TURF Pest Control *Section*, July, 1962 W-1

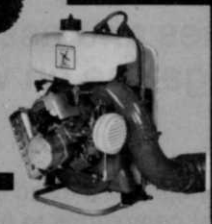
Premier issue of Weeds and Turf, July 1962.

James Nelson, founder and first publisher of Weeds Trees & Turf. Nelson sold to Harcourt Brace Jovanovich in 1967.

VANDERMOLEN
windmill
highest quality Environmental Control Equipment . . . for better living

WHEELED BLOWER
the 2 cycle power blower that weighs only 36 lbs yet packs a 225 MPH wallop!

BACK PACK BLOWER
a portable airblast that cleans up fast everywhere.



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roller flattens weeds to deposit chemicals over greater leaf surface for better, quicker kill. No spray, no drift!

BACK PACK MISTBLOWER
gives fast, even coverage. Sprays 25 ft. up. 3 gal. tankful covers 1 acre in 15 min.

BRUSH CHIPPER
chips up to 3" diam. wood with drum type rotor. 11 to 16 HP models.

SPREADER
broadcasts sand, salt, seed and all fertilizers to 60 ft. swath. Holds 7 to 20 cu. ft.

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Anniversary *from page 23*

many other companies. These authorities saw expanded uses for new chemical technology. "We counseled perhaps most with Dr. Lawrence G. Southwick of Dow Chemical, who was then president of the Northeastern Weed Science Society.

"Moral and technical support came from state universities such as Purdue, the University of California, Penn State, and the University of Florida. We also received assurances from the U.S. Department of Agriculture and state agencies, associations, and many existing vegetation management businesses."

After months of planning, *Weeds and Turf* premiered as a section of *Pest Control* in July 1962. Also, 2,000 copies were mailed separately to vegetation management firms. Advertisers in that first issue were: John Bean, Div. of FMC; Chapman Chemical Co.; Geigy Agricultural Services; General Spray Service Inc.; H.D. Hudson Mfg. Co.; Mine Safety Appliances; Niagara Chemicals, Div. of FMC; Pennsalt Chemicals Corp.; Prentiss Drug & Chemical Co.; D.B. Smith & Co.; Stauffer Chemical Co.; Sun Industries; Vandermolen Export Co.; and Hardie Mfg. Co.

The cover story of the inaugural issue was about J.C. Redd's lawn service venture in Jackson, MS. The article was titled "Multi-billion Dollar Weed, Turf Market Awaits Informed, Diligent Applicator." The lawn service market would have its own publication in 1977, *Lawn Care Industry* magazine, launched from *Weeds Trees & Turf*.

By January 1964, *Weeds and Turf* had a circulation of 8,500 separate from *Pest Control*. As new markets solidified, *Weeds and Turf* devoted coverage to them, as was the case with the sod producer in the mid-60's. The magazine strongly encouraged this market to create an association. Later, the American Sod Producers Association was formed.

To recognize the growth and change in the market, the name of the magazine was broadened to *Weeds Trees & Turf* in December 1964. The change was based upon research that year which had shown hardly any contractor applicator offered just one kind of service. The magazine retains this horizontal stance today.

The title of editor of *Weeds Trees & Turf* was first held by Charles Webb, who was hired by Nelson and also served as editor of *Pest Control*.

In 1967, Nelson sold *Pest Control* and *Weeds Trees & Turf* to Harvest Publishing Co., a subsidiary of Harcourt Brace Jovanovich. Nelson was hired as a consultant for one year as Art Edwards took over the magazines for Harvest.

Edwards held the title of editor at first. In January 1968, the magazine started using four-color covers and Don Miller was hired as managing editor. The new investment by Harvest helped it grow rapidly. Edwards was now editorial director and became publisher in 1972.

In 1969, Gene Ingalsbe started a three-year term as editor. He was succeeded by Jim Sample who led the magazine through some of its largest issues. Sample hired Roger Yount as the magazine's first assistant editor in 1974.

Don Miller reclaimed the title later in 1974. Bob Earley served as managing editor after Miller's departure that year. Gail Hogan became editor upon Earley's move over to *Golf Course Superintendent*. Hogan held the post until 1977 when Bruce Shank moved over to *Weeds Trees & Turf* after four years with *Pest Control*. Shank is now executive editor of both magazines. Tom Paciello is associate editor.

A change in location took place in 1980 when the magazines moved to the parent corporation in New York. Although Ohio offered a wealth of resources, the magazine staff is now less than two hours from Rutgers and Cornell and three hours from the University of Massachusetts, the University of Rhode Island, Penn State, and Maryland with its university and the USDA Turf Research Lab in Beltsville.

In future issues we will look back into time and remember those years as the market and the magazine grew. 1982 is the one score mark and plans are underway for the second score. **WTT**

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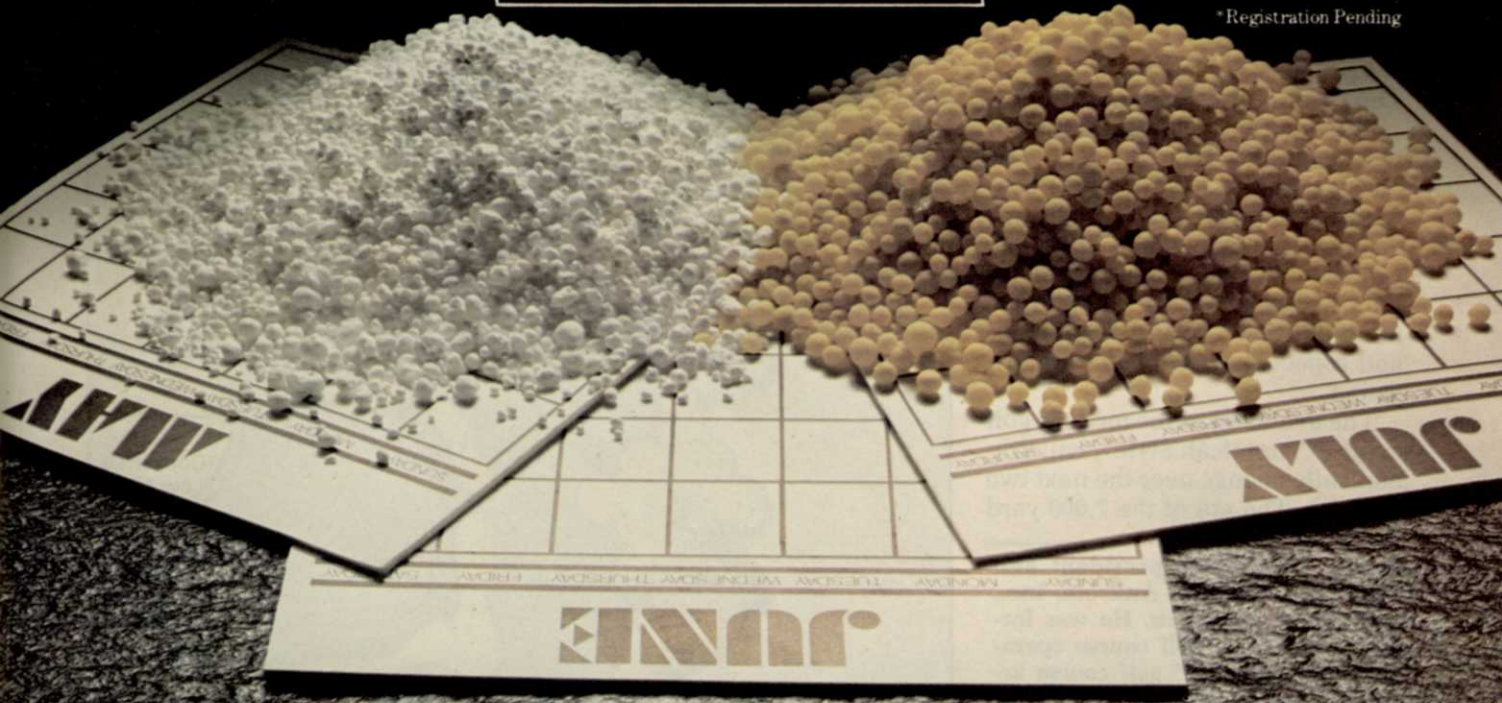

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GOLF'S FUTURE

MODERN PRESSURES FORCE RETHINKING OF COURSE DESIGN

By CHARLES F. ANKROM

The past twenty years have been generous and productive for the game of golf. Developers of residential and resort properties have collaborated with planners and architects to provide for the "UTOPIA" golf green belt. New courses fully irrigated, landscaped, with lush turf stretching from tee to green and maintained by sophisticated techniques, are a major contributing factor toward establishing land values of saleable properties.

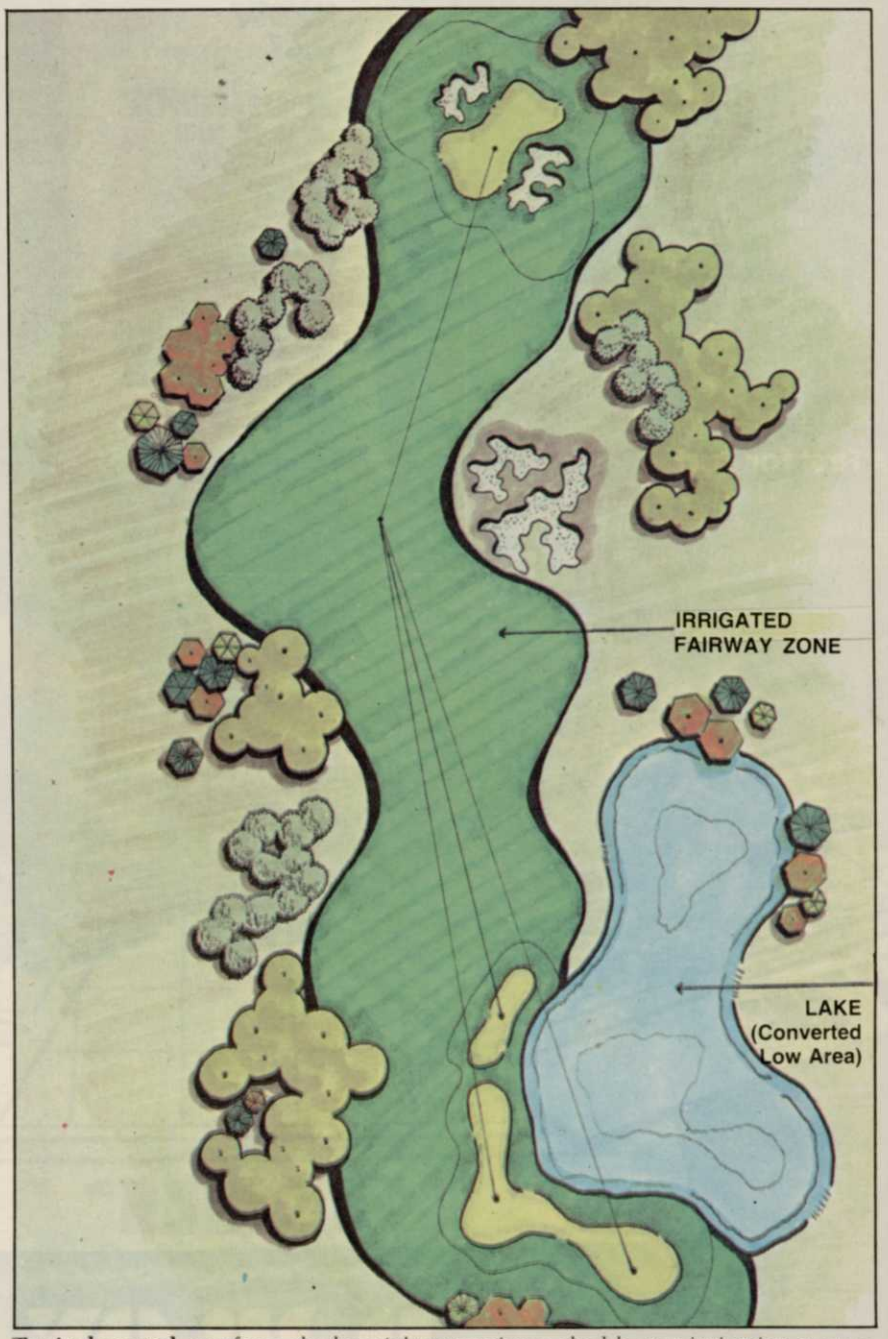
Promotion, video exposure of the PGA Tour, and advertising of finely manicured, picturesque courses have both the public and private sectors attempting to produce a superior or equal product as competition.

The Confronting Problems

The yearly progression toward perfection may have peaked. New design and construction techniques will be affected by our ever changing economy and inflation, ecology, development and maintenance costs, and the availability of natural resources: land, fossil fuels, and especially fresh water for irrigation.

The evolution of the modern golf course, "American Style", will dramatically change over the next two decades. The era of the 7,000 yard

Charles Ankrom is president and owner of Charles F. Ankrom, Inc., Golf Course Architects. He was formerly director of golf course operations and "in-house" golf course architect for a number of firms, including General Development Corp. of Florida, Woodmore Corporation of Colorado and Dart Resorts of California.



Typical routed *par four, dogleg right, assuming a double row irrigation system. Lake created in low area.*

Continues on page 28

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Eclipse Kentucky bluegrass is bred for out-of-this-world beauty and performance. It thrives in sun and light shade and is the ideal base for sod blends and turf seed mixtures for golf courses, parks, playing fields, and home lawns, coast to coast. In national trials, Eclipse was proven to have greater resistance to powdery mildew, leaf rust, Fusarium blight, and dollarspot disease. Eclipse stands up to harsh winter weather and easily tolerates poor fertility and high heat. For a dark green, low-growing turf with strength, density, and texture, you can't do better than Eclipse. There's nothing like it anywhere on earth.

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JACKLIN SEED COMPANY, W. 5300 Jacklin Ave., Post Falls, Idaho • **NUNES TURFGRASS, INC.**, 2006 Loquot Ave., Patterson, Calif.
TWIN CITY SEED COMPANY, 500 30th Ave., N.E., Minneapolis, Minn. • **ROTHWELL SEEDS (IN CANADA)**, P.O. Box 511, Lindsay, Ontario

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long, 175 acre golf course will be numbered. The presently accepted principles and theory may become the exception, rather then the rule.

Escalating and persistent high interest rates, inflation, land costs and maintenance costs will soon establish new trends toward the future golf course. We cannot separate this segment of social recreation from the trends now affecting the automobile and housing industry.

The future golf course, by necessity, will also have to become more efficient. We can view this with either a pessimistic or optimistic attitude. Numerous factors will affect the golf construction industry. These include:

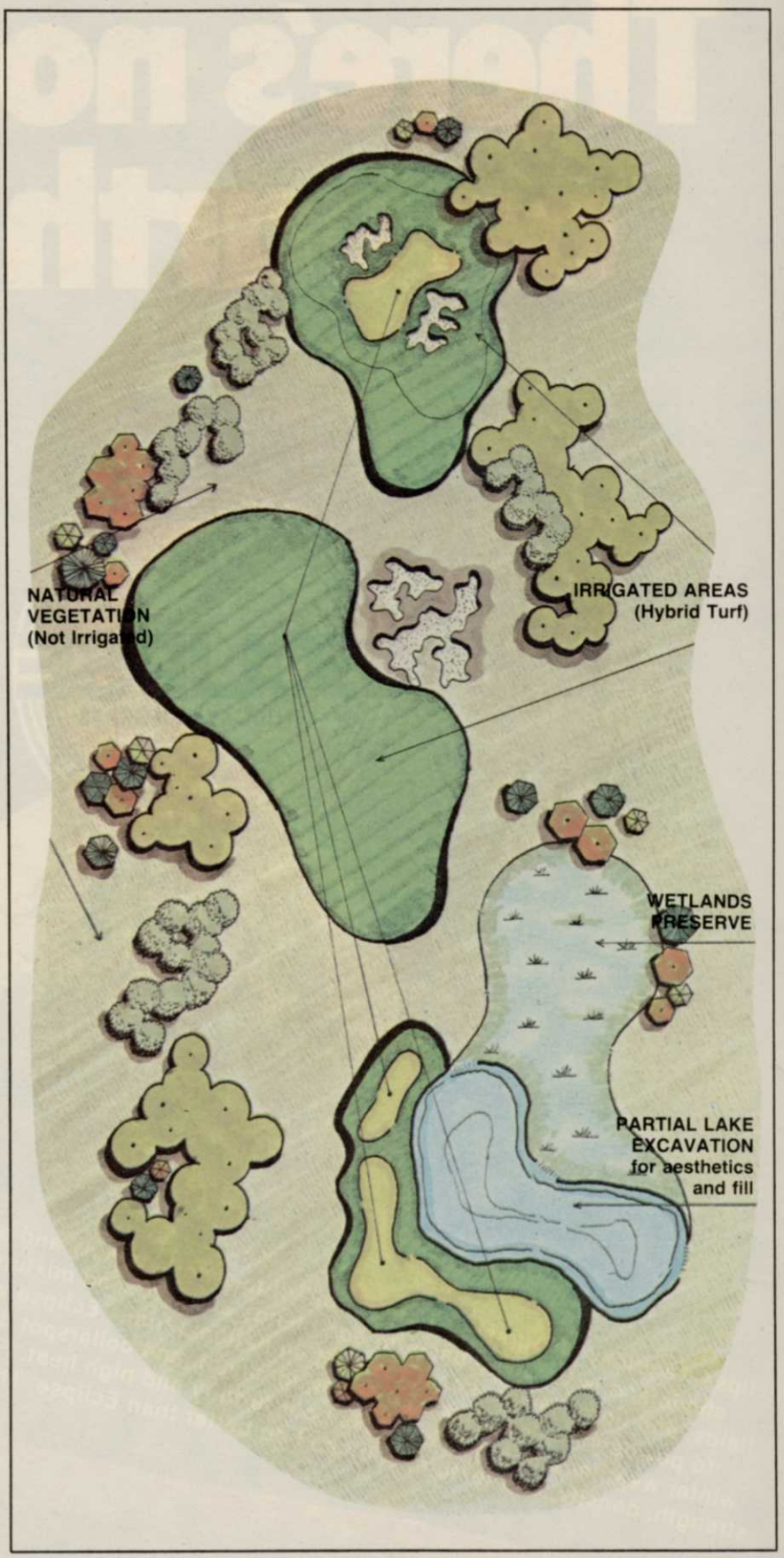
Land: Rapidly escalating values, high purchase cost, available parcels located geographically to warrant a return on investment.

Inflation and financing: Spiraling costs, high interest rates and a prime rate governmentally controlled to reduce expenditures, will have an impact upon both the private and public sectors; purchasing land and construction of development orientated courses, the procurement of general obligation or revenue sharing bonds by counties or municipalities to finance public courses.

When interest rates exceed 14-16%, they discourage new development as the cost to repay debt service becomes excessive. A continuously high prime rate over 20% would shut down new course construction except for the very few affluent companies with high daily cash receivables, such as oil companies.

Increased construction cost: Construction is paid for by liquid assets of the developer, borrowed money, and the cost of money. Cost increases shall also be passed on by the contractors, which include expensive, large earth-moving equipment for building the new golf course, irrigation equipment, grassing, labor, materials, chemicals, fertilizer and all items required to grow-in and mature a course.

Maintenance and operations: Many modern golf facilities have



Same hole *in future with hybrid turf and irrigation in key areas of tee, fairway and green only, framed by native drought tolerant grasses. Partial lake created for fill and then with preservation of wetland acreage.* *Continues on page 32*

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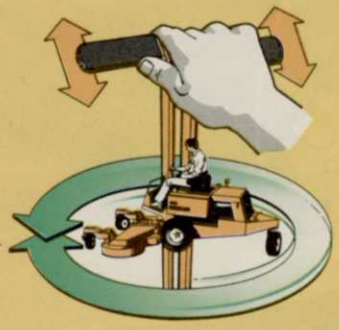

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3 The cleanest of cuts.

The three heat-treated blades with air-lifts along with the Cushman deck and baffle design cut the grass cleanly. Clippings are lifted up and discharged out the chute evenly, eliminating the blade drag that eats up power. Choose a 60″ or 72″ deck; both offer top-mounted grease fittings and covers that remove with just two wing nuts. The 72″ deck also comes with wash-out holes so collected debris can be flushed out during normal maintenance.

4 No scalping.

Rear deck rollers work along with the front wheels to keep the deck and blades off the ground, even over rough terrain. Springs are also available to absorb deck weight and allow the deck to "float" with the contour of the ground. (These anti-scalp packages are optional, depending on the contours of your particular turf.)

5 Year-round versatility.

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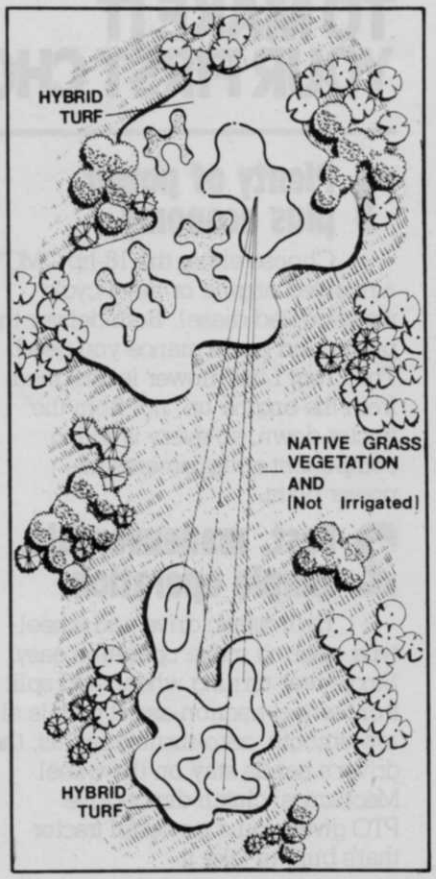
approached the $300,000 per year budget to maintain their turfgrass programs. This rapid cost increase in course maintenance, particularly in labor, equipment, replacement parts and materials, must be passed to the overall fee structure of play or yearly membership dues.

Environmental regulations: Sensitive wetlands are now surfacing as one of the new criteria facing development, and will also have an impact on proposed golf courses. Governmental agencies, mandatory land use plans, and the preservation of wetlands are forcing owners and planners to more limited development. The new golf course will be forced to encompass airspace over wetlands, rather than convert these areas to lakes, and use more marginal areas of terrain. The developer, however, still must recapture the total cost of all air space.

Inexpensive fossil fuels: The decline of inexpensive fossil fuels is a world problem, and definitely the major contributor to inflation. All materials are affected as we deplete our resources of fossil fuels, particularly oil, and later, coal. Gasoline now is averaging about $1.40 per gallon, and can you forecast golf course construction and operating costs when depletion raises this price to $2, $3 and even $4 per gallon?

Water shortage: Perhaps the most serious single item having the greatest impact upon new golf design and construction programs is the water shortage. This is not a new subject, for water scarcity and availability have been problems throughout many portions of the western United States. In the early 70's, I was personally involved with a California-based developer where several courses paid fees to the water districts for water consumption, and recording meters were attached to wells. The cost for local well water on a California project was so excessive that we converted to potable water at a more favorable fee, and at the same time eliminated a high soluble salt problem. A Hawaii project paid the state $100,000 for water rights just to irrigate the golf course!



Typical par three hole demanding irrigation only in proximity of tee and green with native grasses and vegetation between the tee and objective target point.

The surfacing of water problems has just hit the eastern United States and in particular Florida. In recent months, numerous articles on this subject have been produced, written and published in national publications such as Life, Newsweek, and turf management journals.

Lake Okeechobee, the major source of potable water to south Florida, and which physically aids in recharging underground fresh water reserves and aquifers, reached an all time low of 9.75 feet in July, 1981. South Florida counties and cities are under modest water use restrictions, but this is expected to escalate this winter, barring recharge by a major storm and human efforts of cloud seeding with silver iodine crystals. The recent high level mark of this lake at 12.09 is not enough to prevent restrictions during the 1981-82 winter dry period.

If the water management districts impose 25%, 50% and then more cuts or moratoriums, we are in serious trouble, and this could be just the beginning. A major catastrophe of acute water shortage could cause enactment of new governmental regulations, increased monitoring of fresh water usage, less obtainable wells, and then limitations on non-humanitarian uses, such as parks, golf courses, and large recreation green belts.

The underground drawdown of fresh water is now tremendous and will accelerate each year as population increases. The fresh water aquifers in both south and north Florida are being depleted, with many wells accelerating in salt content. There have been reports that by the year 2000 we will nationally be consuming 35% more potable water from our available resources. How can we compensate and adapt to future available sources, principles and demands on the game?

Future trends

The golf course architect is to be confronted with a most difficult and acute task by the 1990s. Keeping the game alive and healthy must require an acceptance of both new and old techniques and principles of the game.

Sure, we have been spoiled. That is pure fact!

This past year I had the pleasure of spending ten days in Scotland playing courses of our heritage; Royal Dornoch, St. Andrews, Prestwich, and Turnberry to name a few. Royal Dornoch at over 300 years of age, and St. Andrews of up to 500 years was indeed pleasurable, and with the least amount of maintenance on fairways, and irrigation only on tees and greens.

As a youth in West Virginia, I developed and learned the game on public courses without fairway irrigation, and loved it, for I really didn't have exposure and accessibility to the elite facilities.

In the past year I have reviewed many pessimistic reports on the negative factors confronting new golf projects; the reduction of product goals due to depletion of natural resources, a complete return to the

Continues on page 34

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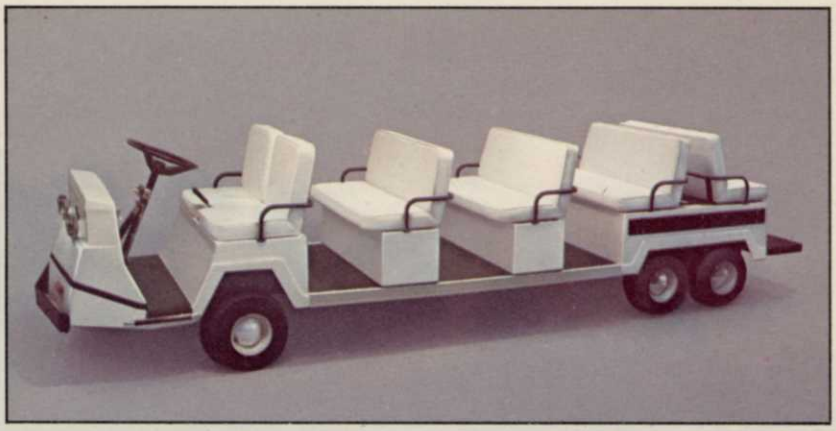

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original Scottish principles of management, etc. However, I am not a firm advocate of such drastic action and am very optimistic that we need not retreat to this level and forfeit many of the exciting advances of modern design. Rather, we can compromise to integrate the technology of the future and the sound principles of our past.

We have within our means the ability to produce a high caliber playing course with both natural beauty and designed aesthetics, yet cut the cost of construction, maintenance, and demands on natural resources.

Return to basics

By discouraging and abandoning the construction of the 7,000 yard golf course in favor of shorter courses in the 6,100 and 6,700 yard range, we place a premium emphasis on shot placement, accuracy, "strategic" and "heroic" golf holes. We can design, develop and use more dramatic and exciting greens artwork, contour mounding and hazards, either natural or created. The target areas of fairways can be more defined, and complimented by site terrain, sculptured features, natural or planted tree cover and vegetation.

To enhance the strategic shorter course, we can:

A. Use more definition of greens putting surfaces and pin placements, with exterior trapping and interior contours to emphasize putting and shot making to a "position of the green."

B. Develop more natural curvilinear, split-level, and attractive tee forms, rather than simple elevated box or rectangular tee positions. By curved forms, we can change direction in addition to distance.

C. Use more modulating and sculptured target zones of fairways to demand a science of strategic shot making. This can be supplemented with attractive trapping and tree plantings (or curved clearing lines in wooded areas) to serve as a hazard. Extremely level fairways tend to eliminate the varied skills required to play the ball below or above the address position. Rolling or modulating fairway/fairrough zones prevent a particular hole from becoming routine, or monotonous play, plus they are more attractive.

D. Define the fairway zone from the rough zone by using different grass species and/or mowing heights. Future courses may use more native non-irrigated turf in roughs. On most courses in Scotland, only the fairways are maintained at a short cut, and the rough is purely native vegetation.

Lobby the U.S.G.A. to revise their system of ratings to allow for more credits for natural or design features and hazards rather than too much emphasis on distance. The rating committees may not realize that their formulas have caused many developers to direct architects to lengthen courses just to pacify the terminology "championship", and a rating which matches or exceeds par of the course.

Land usage

As land prices soar, combined with high interest rates and a premium on borrowed money, expect pressure from the owners to instruct the architect to utilize less space. New development regulations and environmental rules may also force the architect to use sites of less interest, for in many cases, the purchase cost per acre includes both developable and non-developable terrain for housing units.

We can partially relieve this pressure by building shorter strategic courses, and more cluster or core golf courses which utilize less space. In recent years, development trends emphasize numerous single-routed holes exposing more saleable property, but using large parcels to achieve their goals.

More professionally designed executive courses, occupying considerably less land mass than regulation layouts, can easily be adapted to small projects. A quality executive course will have a reduced total cost and overhead, and can be marketed to the golfer at lower prices. They also are valid as aids to encourage new players, and do not usually require golf cars—a fact which has also prevented many young players from taking up the game.

The exception will always occur for those projects where more affluent clients have abnormal high assets, and in rural areas where land costs are more lenient, and/or development rules and land use plans prevent high densities, thus allowing more space for the golf course property.

Effluent and ground water

As irrigation and ground water reserves decrease, we may have to reconsider our present irrigation methods. Trends may arise that place more emphasis on design technology to irrigate with less water, calculate automatic surface applications more carefully, and consider the future increased use of effluent water.

Presently, millions of gallons of effluent water are wasted daily into our native waterways and streams. A percentage of this resource could easily be recycled, and indeed there are efforts now proceeding in this direction. Because of old pipelines and discharge sources, the most available effluent waters for future usage will probably be derived from new development design and engineering directed specifically to land and turf applications. A project using effluent wastewater on their golf course, even as a percentage of total requirements, then would suffer the least in the event of restrictions imposed by government regulating agencies. Recently I received a report that about one-half the golf courses on Hilton Head Island were now using effluent water, and that in the next twenty years, all could be irrigated partially or entirely by this method.

Irrigation companies can also assist by encouraging the design of new systems using less water per sprinkler head, and even accelerating experiments to produce sprinklers with a longer arch of coverage, combined with less gallons per minute.

Superintendents can also be more considerate toward programming of the automatic controllers to minimize discharge at particular stations, rather than setting out a blanket of coverage and assuming

Continues on page 38

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Modern *from page 36*

15-25 minutes per station. I have personally observed many courses where overwatering was prevalent, to the point of creating unhealthy greens and tees.

When more restrictions and limitations are applied, the architect on each project will have to work more carefully with the owner to direct design applications, at first toward the key areas of play and artwork features. This is now a very common practice in the western United States which has a history of water shortage.

Turfgrass and soil studies

For tees, fairways and greens we presently have several excellent hybrid varieties developed to produce an outstanding quality turf, yet many golf courses have a problem of being subjected to play all year. Owners, management and golfers are always critiquing the maintenance of turf and pressuring the superintendent for continuous high levels of turf color, uniform mowing patterns, and cringe at the site of a native weed!

My particular problem in determining turf for roughs and fairroughs is the lack of varieties available which are drought tolerant, yet pleasing to the eye and adaptable for golf play. The most frequently used varieties are Bahia, common Bermuda and occasionally Centipede, (except for wall-to-wall hybrid turf), In the northern geographic regions of the United States, we can choose from many more seeded varieties, and also have limited seasons to play and traffic.

I personally receive very little input from associates and professionals in the business about experiments on new or improved species of drought tolerant turf for certain areas. Increased research and soil studies in this area is warranted.

As an example, the contrast of perimeter Bahia in the rough to 419 Bermuda fairways gives a most natural appearance, but I wish there were more slow growing or dwarf varieties of Bahia from which to choose. This has been mentioned before by members of the American Society of Golf Course Architects. However, the testing stations, companies and agronomists with expertise in the turfgrass industry should be *persistently* exploring solutions to this ever growing complex situation.

The modern golf course architect is required to be more sophisticated than our peers of the past. Previously, we selected the most conducive sites for new courses. Now we must accept what is given us, and frequently, the worst property in a given location not financially suitable for other purposes.

From a previous single page sheet, we now are preparing a 50 lb. packet of documents and exhibits to pacify the demands of the future course, plus the burden of satisfying the requirements of a multitude of governmental agencies. The next twenty years will be interesting and a process of evolution. **WTT**

Advances in Turfgrass Pathology

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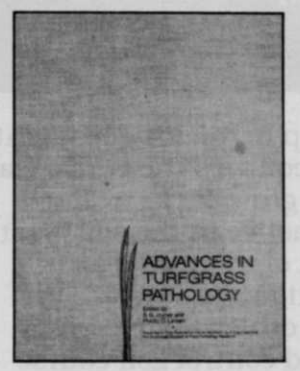

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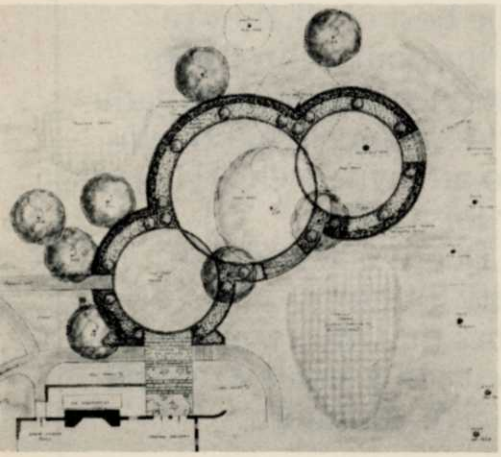
GARDENS FOR GOLF COURSES: SUPERINTENDENTS MUST MANAGE MORE THAN ACRES OF TURF

by R.P. KORBOBO and JEANNE A. FRENCH



Plan for *Winner's Circle garden with room for expansion. (Essex County Country Club, W. Orange, NJ)*

The golf course superintendent is most frequently thought of as the turf or "greens" keeper of a golf course. Too often forgotten are his additional responsibilities of clubhouse and maintenance building areas, and the thousands of non-turf plants under his care.

We are now observing that country clubs are adding landscaped gardens for golf and non-golf functions throughout the course. These gardens serve both aesthetic purposes.

Garden for large groups

The winner's circle design (on left) is an expandable/retractable garden which can adust to the size of a particular group. The circle closest to the clubhouse could easily hold 75 to 100 stand ups or about 30 to 40 sit downs. If the stand ups approached 200 in number, then the large circle could be utilized. For larger groups, all three circles would become involved.

The low hedge around the outside of the circles would be a suggested enclosure, as well as a subtle barrier from the golf course traffic in that area. The pathway into the far circle would be used by golfers coming off the 18th green during a tournament. The score board would be nearby and the tournament champions would be feted in the center "Winner's Circle".

During the days when no large function is planned, the area over looking the 18th green has chairs and tables for the members who want to sit outside and watch the activity on the course.

When the garden is free of all people, then its strong circular design and flowers in fall color will be a sight to behold from the elevated cocktail gallery. Walking through or viewing any well designed garden definitely lifts our spirits.

The first *impression of the course is made at the first tee. This garden at Forsgate Country Club, Jamesburg, NJ, has a formal look and is known as the Tee Garden.*

Gardens for viewing from clubhouse

Some garden areas are designed for viewing only, mainly from the

R. P. Korbobo and Jeanne French are landscape architects serving mid-Atlantic golf courses. Korbobo has served Rutgers as extension specialist in landscape design since 1946. French has practiced golf landscape architecture since 1963 and was the first woman graduate of the Rutgers University program.

Continues on page 44

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Low maintenance *natural areas, left, serve as garden features at New Canaan Country Club.* **A natural** *setting for the halfway house, right, at Mountain Ridge Country Club, is visible from a number of holes.*

dining rooms. Enjoying a meal while viewing an elegant garden scene certainly has a calming effect and adds to the atmosphere of the dining room. Also a beautiful view encourages members to "come again".

One club wanted to do something for its 50th anniversary celebration. There was an area between the 1st tee, the practice green, and the clubhouse that needed landscape attention. After much transplanting and some discarding of unsuitable plants, the entire area was transformed into an attractive curvilinear flower garden. It was mainly to be viewed from the dining room. During their 50th year celebration (1972), all flowers and some foliage plants were as close to gold as we could get them, which meant mostly yellows and oranges. It is now referred to as the "50 year garden" and other colors are used. It is a tremendous addition to that particular clubhouse and everyone delights in its colorful display.

Since the dinner hours often occur after dark, the same garden can be transformed into a beautiful night scene with the addition of tasteful night lighting. The lighting effects can be altered throughout the year to highlight the changes of seasons. As different plants come into bloom or when foliage changes color, they can be uplighted with movable spotlights. This kind of garden can be considered as part of the decoration of the dining room, and should have eye appeal all months of the year.

Entrance gardens

The first impression of an entrance to any building, particularly a country club, is tremendously helped by a colorful, well maintained area of flowers, which provides an unspoken welcome to the visitor.

In one particular entrance plan, the element of flower color is provided for three seasons of the year. The spring display is a combination of Magnolia blossoms and bulbs on either side of the entrance walk. The summer bloom is concentrated in the two planting beds with massed red Geraniums which continue to bloom through the summer and into the fall. If late fall color is desired, Chrysanthemums are used.

When freezing weather comes, an attractive mulch is used to cover the soil, and the dwarf Boxwood edging provides a neat effect through the winter.

The 1st tee

There are areas directly involved with the golf course which sometimes lend themselves to the development of a garden. One of these areas can occur at the 1st tee. In this case, the primary object is to set the mood of the club, and a necessary prerequisite is available space for this project. Page 42 shows a reclaimed area which has now been dubbed the "Tee Garden". This was, for many years, an unattractive, unused championship 1st tee. It was nothing more than an uneven mound of earth, flattened at the top, with mud around the lower edges where it met with an uneven edge of blacktop. Now it can be described as one of the most attractive golf tees in the area. No one who visits this golf course will forget the picture of the first tee if they are there during the peak of the flowering season. Even in the dormant season, it has enough architecture and evergreen plants built into the design so that it does not lose its basic character, but remains an attractive area year-round.

Very often we find on certain golf courses, especially those on hilly terrain, some elevated tees from a foot to sometimes 6 or 7 feet above the surrounding area. This gives a great opportunity for retaining walls, either made of stone or landscape timbers, to get rid of the problem of trying to maintain turf on an extremely steep slope. Therefore, when these retaining walls are designed you can also design into them the so-called planters. The distinct advantage of this is that by having an area of flowers between the edge of the tee and the retaining wall, there would be very little danger of someone absentmindedly taking a step or two backwards toward the edge and falling off. Undoubtedly, this has happened in some places since some tees that we have seen do present this hazard. So, raised tees would be another place to add color and interest through use of flowers, shrubs, hedges, etc. These would not precisely fall in the category of

Continues on page 48

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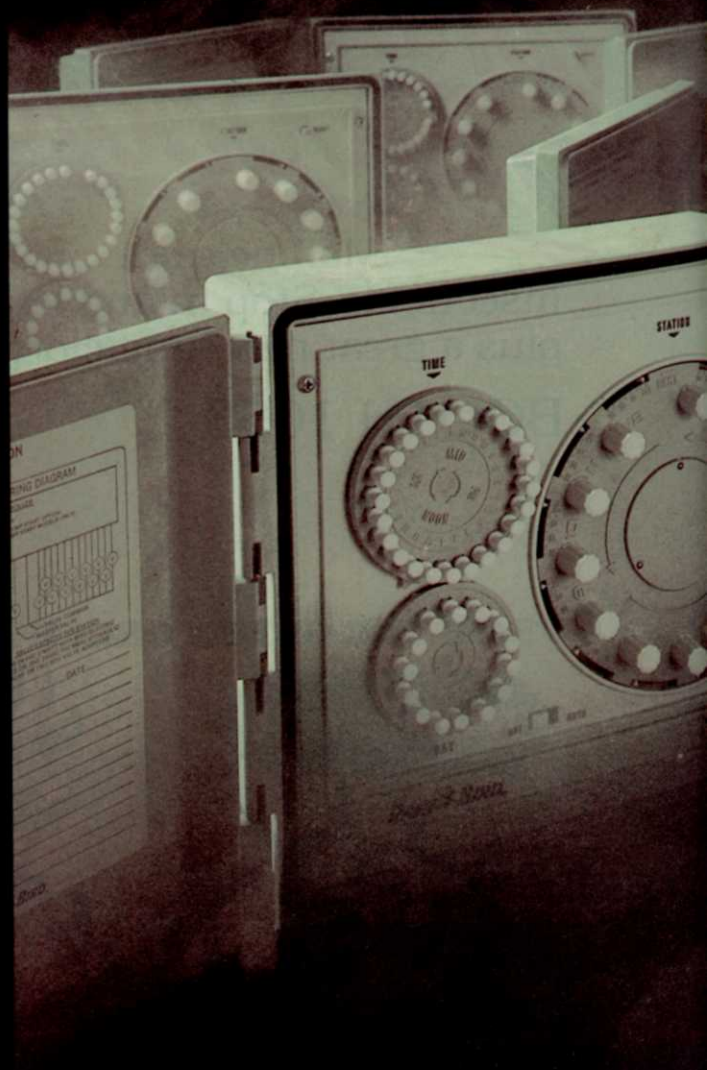

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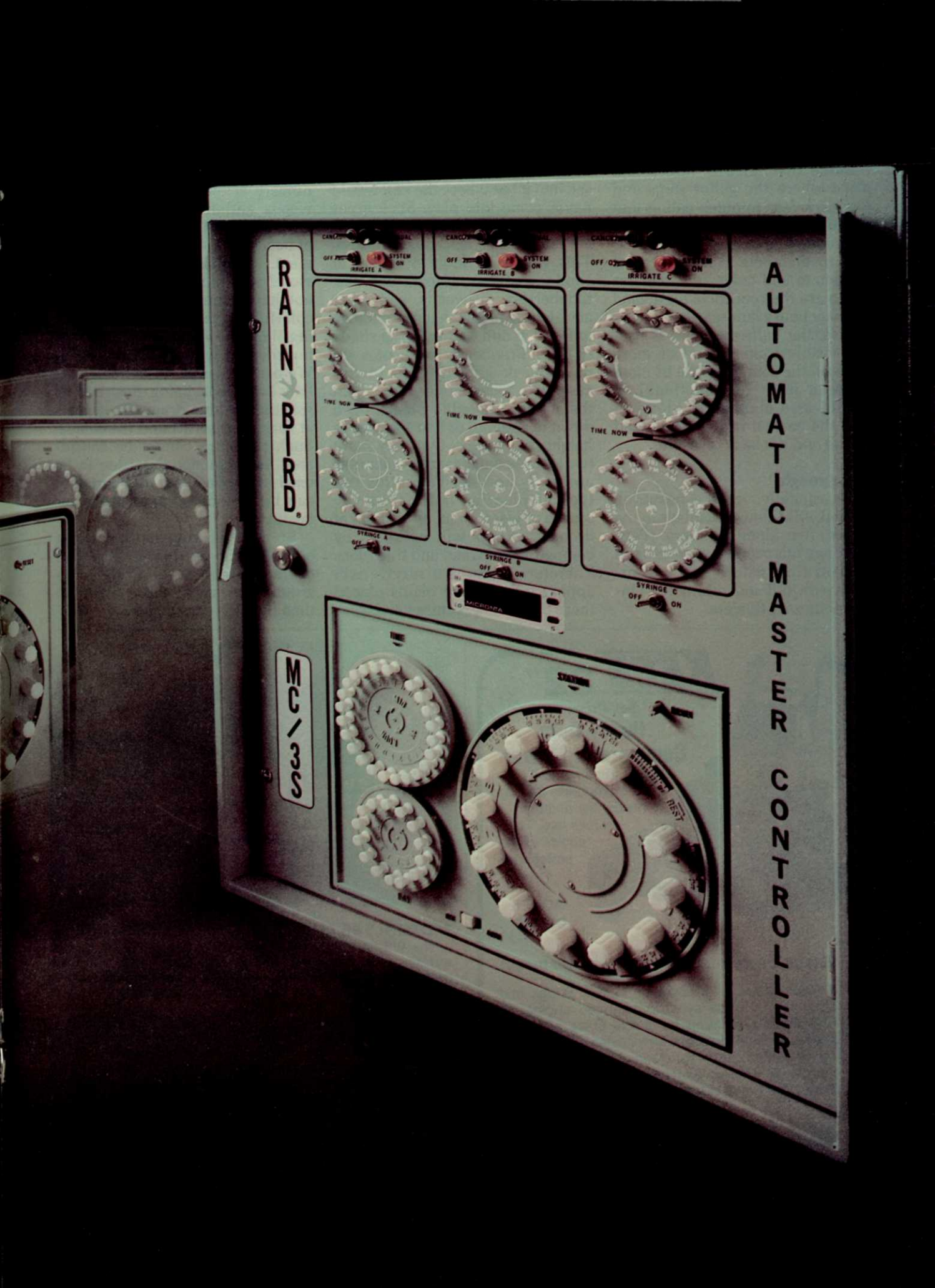
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a garden, as such, but it could be called a "garden spot".

The halfway house

Since the halfway house is a place where the golfer stops and spends a few minutes eating and resting, an attractive and well maintained area is most appreciated by members. A small area of flowers to add color and trees for shade are the requisites for a good halfway house landscape.

Also, the halfway house is usually visible from several or more holes on the course. While its main purpose is to be functional, it should also manage to blend in with the natural beauty of the golf course and not be an eyesore.

In the rough

Occasionally, we see beautiful, natural, wild flower displays in the rough often along a stream. (Page 44) When this occurs, we consider it a bonus from nature, and encourage it with judicious additions of indigenous wild flowers.

In most parts of the country where ericaceous plants thrive (rhododendrons, azaleas, laurel, etc.) we frequently find areas in the deep rough where the golfers can see into it but where the ball would never come into play. Such areas would be ideal locations for what we refer to as ericaceous plantings. This would be large numbers of rhododendrons, laurel, azaleas, blueberries, dogwoods, and other acid-loving plants that can manage to flourish and bloom in the shade of trees. Frequently, such sites are on hilly, or gravelly soil. In this case, we recommend they plant the smallest possible plants, even down to as small as 3 to 4 inches in height. We suggest that they plant two to three times as many plants as are really needed. Very often this type of planting is far from the source of water so many will die of drought. Others will be killed by competition of weed and tree roots. Therefore, those that survive will appear to be native plants placed there by Mother Nature herself.

Everyone is struck by the beauty of the Augusta National Golf Course, scene of the Master's tournament. This is primarily because it was cut out of an ornamental plant nursery at one time and the dogwoods and the ericacious plants left behind put on fantastic displays of beauty at the time of that tournament. There is no reason in this world why more golf courses cannot have similar and even more colorful displays. We are not talking about our entire golf course being covered with flowering plants. We are, however, visualizing certain key areas being designed to specifically give dramatic displays at various areas around the course. Such plantings cannot be considered as a functional garden to be used for parties—but they certainly can be considered as planned for beauty.

So may we suggest that when considering garden areas, golf courses as well as the Club House grounds be given more attention than they have in the past. **WTT**

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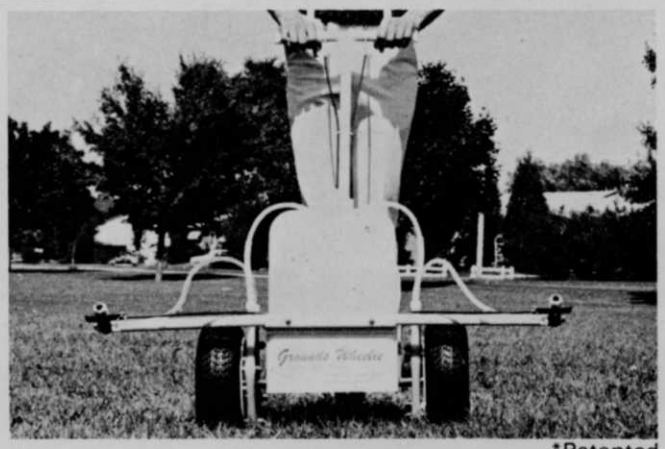

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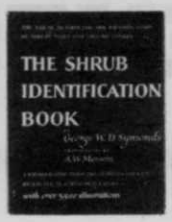

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WTT 12

PRUNING: A KEY TO INTEGRATED PLANT MANAGEMENT

CONCENTRATE ON YOUNG TREES AND AVOID OVERPRUNING

by DOUGLAS J. CHAPMAN

Over the next twelve months we shall take a close look at INTEGRATED PLANT MANAGEMENT, that is, matching the plant's physiology with ground management goals. One factor certainly is *species selection*. Another overall major management strategy is *pruning*. This is composed of when, what, how, and frequency of pruning. To more knowledgeably make these pruning decisions, one should understand how a tree grows, its gross anatomy, and the tree's response.

Trees have essentially two growth centers or meristems. They are the terminal meristem and the lateral meristem (cambium), located just beneath the bark. These two growth centers are involved with increasing the plant's height (terminal growth) and stem diameter (lateral growth). The center (heartwood) of branches and/or the trunk are non-living with the main function being support.

The stem's meristematic region, the cambium, is part of a thick band of living tissue which sheets the entire tree. The cambium's normal function is to produce xylem tissue inward for upward conduction of water and phloem tissue outward for the downward translocation of carbohydrates, etc. The cambium is also important in callusing over or closure of the wound. Outside the region of living tissue is the protective bark. Plant bark is somewhat analogous to the skin covering the human body from the standpoint of offering protection from the elements—water loss, mechanical damage, disease infection, and decay. Located inside the band of living tissue toward the trunk is a non-living heartwood which provides the plant with a structural framework necessary to support a heavy canopy of branches, twigs, leaves, and fruit capable of withstanding the rigors of the elements.

Pruning *provides neat appearance and tree health.*

The plant's response to wounding is important for it dictates how best to prune. It is important to remember that pruning results in the removal of undesirable plant parts but also inflicts a wound. Wounds to trees and shrubs are defined here as any break in the continuity of the outer protective bark which penetrates into the living tissue or deeper. The tree's response to pruning wounds is first compartmentalization or isolation of the wound and then callus closure, as carefully described by Shigo. Normally, small wounds are potentially less harmful than larger wounds. For this reason, the removal of limbs over one and one-half to two inches in diameter or cutting of the main trunk should be avoided whenever and wherever possible. This outer living area is critical in minimizing the effects of the wound and insuring rapid wound closure. This phenomenon is dramatically different from the response of animal injury, which we are familiar with. Wounds in trees do not heal, but the damaged area is isolated or walled off.

Compartmentalization is the chemical and physical response of the tree to wounds. Initially after pruning, the tree forms tyloses. This tylose response is essentially plugging the vascular tissue with chemicals, e.g. phenol compounds, which slow or stop the decay organism. Normally the sidewalls are more resistant to decay or invasion of fungi than are the endwalls of vessels. A wound's compartment appears as a discolored-vertically oriented, often irregularly-shaped

Continues on page 54

Douglas J. Chapman is a Horticulturist at Dow Gardens, Midland, Michigan

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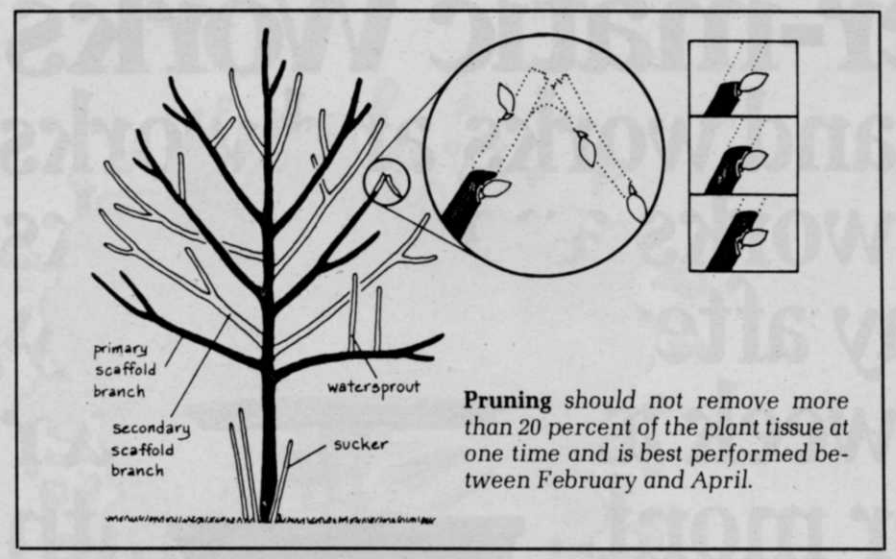
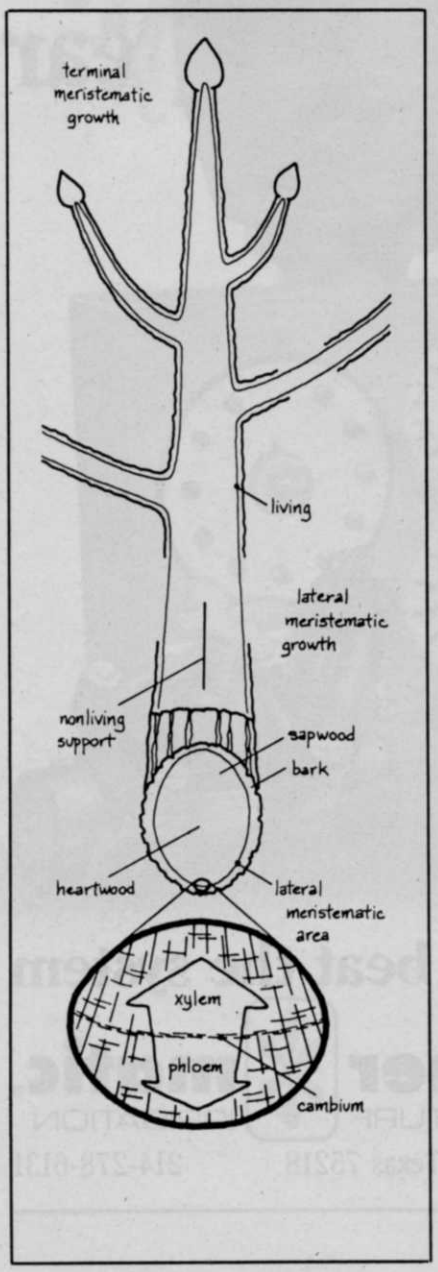


Pruning *should not remove more than 20 percent of the plant tissue at one time and is best performed between February and April.*



area in the heartwood of the tree. Some trees are relatively quick compartmentalizers and effectively isolate the wound, e.g. Sugar Maple, pine, and Scarlet or White Oak. Others are poor compartmentalizers, e.g. birch and Silver Maple. The next step in the tree's response to minimizing wounds is closure. Closure is simply the plant producing callus tissue which covers the wound or injury, reducing the climatic conditions that favor the activity of decay or saprophytic fungi. Callus tissue originates in the meristematic area at the periphery of the wound and expands across its face toward the center. Wound closure occurs when callus tissue completely covers the wound's surface. When pruning, it is important to encourage rapid closure of wounds. Conditions favoring rapid callus formation include a healthy-vigorous tree, minimizing wound size (cuts under two inches), flush cuts (not penetrating the collar of the branch attachment), and trimming back the edge of the bark to where it is still tightly attached.

Obviously, small wounds close most rapidly, thereby, minimizing exposure of sap and heartwood to weather. Wounds which close in one season are most desirable from the standpoint of preventing serious decay. Branches should be cut at crotches or point of attachment. Correct placing of the cut is important to rapid callus formation and reducing effects of weathering, i.e. checking. The best pruning cuts result in the smallest wound while eliminating branch stubs. This type of cut is usually referred to as flush cut. Drying out and die-back of living tissue may occur to some degree if care is not taken to limit tearing or separation of the bark.

In addition to this two-fold wound response, pruning can affect flowering and fruiting. The carbohydrate-nitrogen ratio in woody plants determines whether the tree will promote vegetative growth or flowering for the particular year. Pruning tends to reduce carbohydrates and may, in situations involving severe pruning, cause the plant to put on excessive vegetative growth and, thus, not flower. Conversely, a periodic controlled pruning program can be used to sustain annual levels of flowering and fruiting. Further, in the case of deciduous trees, severe pruning can cause development of weak branches, known as suckers or watersprouts. These branches commonly develop from latent adventitious or axillary buds located under the bark near branch axils and/or at the periphery of large pruning wounds. They are usually considered undesirable but one must realize suckering is commonly a response to excess pruning or removal of over 20 percent of the plant's leaf and woody tissue at one time. Several plants have a natural tendency to sucker excessively, e.g. crab apple, linden, and Silver Maple, and, therefore, these are high maintenance plants or trees requiring pruning every two to three years. Normally, pruning young trees and developing a structure for the future is a key to pruning and *not pruning throughout the life of the plant.*

Timing for the pruning of deciduous trees is critical. The period from late February through mid-April or late dormancy until bud swell is best. On a scale of one to ten, early spring is ten, whereas, the rest of the year, except mid-August, is one.

Late dormancy pruning results in rapid compartmentalization, closure, and little drying. Pruning during late spring, after growth starts, or early summer seems to result in limited plant response, e.g. poor callus formation, little compartmentalized response, and drying of

Continues on page 58

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meristematic areas at the edge of the wound. Fall pruning, after the leaves drop, often results in minimal plant response and some heartwood decay. Mid- to late-August provides a second period for pruning. At this time, the lateral meristem or cambium is still active. It is a time when maximum increase in trunk diameter occurs, thus, allowing for rapid wound response. In many cases, closure can occur before dormancy. This second pruning period is best suited for light pruning or trees that bleed heavily, such as birch, elm, and maple. It must be added that bleeding has not been reported to cause an adverse effect on trees, but if one can prune and eliminate this phenomenon, it is good for public relations with no negative impact on the tree itself.

Generally speaking, pruning objectives for young-vigorous trees include the culture of healthy, disease-free, symmetrical plants. The following rules help achieve these goals:

- start pruning trees when young;
- maintain a central leader;
- eliminate narrow v-crotches;
- remove dead and diseased branches;
- eliminate insect infested branches;
- remove rubbing or deformed branches;
- select well-spaced, broad-angled scaffold branches.

Pruning trees correctly, when they are young, eliminates most of the problems encountered by owners of middle-aged or mature trees and helps decrease or eliminate the need for pruning after the first few years. The less pruning one can do, the better it is for trees.

Establishment and maintenance of a single, centrally-located vertical stem or leader that dominates in height over all the plant is important. This reduces narrow v-crotch branches or double leaders in trees —one of the main causes for storm damage. Wide angle crotches, between 40 and 90 degrees, result in stronger branch attachment, thus scaffold branches. Narrow crotch angles result in weak branch attachments which are subject to storm damage. Further, removal of dead and diseased branches is important. Prompt treatment allows the tree to compartmentalize the injury and, therefore, reducing deterioration of sapwood or heartwood, while encouraging rapid closure.

Limbs that change direction frequently are aesthetically pleasing but tend to grow into each other, resulting in crossing or rubbing branches. Branches that rub on other branches, buildings, or hard objects incur substantial wounds that may become a site for decay. For this reason, one of the two crossing branches or limbs should be removed or shortened while redirecting the remaining branches.

Pruning can also stiffen branches while determining the direction of growth. Buds, pointing parallel with the stem, are most likely to form narrow crotches; therefore, one should prune to the next lower bud to encourage the branch to grow at a 90 degree angle away from the main leader. Cuts should be pointed toward the bud to reduce bud death due to desiccation and encourage callus formation. Since the branches that will be with the tree the longest and will bear the greatest weight of a mature tree are formed when the tree is young, it is critical that structural pruning be completed during the first four years after planting. It is not uncommon for the majority of the tree's crown to be supported by four to seven main scaffolds. Pruning of scaffold branches which are no higher than 12 feet from the ground are easy to prune with minimal equipment. It is quite possible for the average person to mold his well-proportioned shade or ornamental tree without touching a ladder or leaving the ground.

Normally, the volume of leaf surface or branches removed during heavy pruning should never exceed 20 percent. Light pruning constitutes removal of roughly 5 to 10 percent of the tree's leaf surface or branches.

The tendency to over-prune young trees can be partially overcome by maintaining secondary scaffold branches for a few years. Such limbs serve both aesthetic and physiological functions while acting as replacements, in case of main limb loss during early years. Such limbs should be removed at or by the time they are one-inch in diameter.

It should be stressed that pruning trees when young means that a crew of one or two men can prune up to 100 or 200 trees a day using hand shears, versus corrective pruning of middle-aged or mature trees that require bucket trucks, often results in heartwood decay and decreased total productivity (pruning two to three trees in an eight-hour day). When considering the plant's physiology and our budget constraints, it is more efficient and beneficial to prune young trees at the correct time versus pruning middle-aged or older trees. Four- and five-year pruning cycles can often result in large wounds which don't heal with little improvement in the total structure of the tree. Pruning several times when the tree is young results in structurally sound trees that don't have to be pruned at maturity. Pruning of older trees should be kept at an absolute minimum because their wound response is slower while heartwood decay is increased. It is more difficult to prune older trees economically; therefore, the pruning of older trees should be considered to correct storm damage only, not trying to structurally improve trees that weren't pruned when they were young.

Wound dressing—the use of a wound dressing is a time-honored practice which has little or no empirical justification. To date, there is no tree-healing paint which is considered to be a panacea to limit pruning damage or heartwood decay. Tree healing dressings are commonly used for cosmetic purposes—black in color, essentially covering a large, unsightly wound.

One key to maintaining a landscape is correct pruning. Corrective pruning should be actively practiced on younger trees at the right time of year—March or August, to improve structure and remove deformities. If the aforementioned practices are implemented, the grounds manager, golf course superintendent, or horticulturist is truly using the tree's physiology in concert with management strategies—a combination that is hard to beat! **WTT**

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PHOTOGRAPHIC PROOF OF GOLF COURSE NEEDS

by JAMES E. TRIGG

Is your Greens Committee bored and inattentive when you present your annual report and landscape budget? Do they truly understand what your proposal is all about?

Passing out charts, literature and written matter is often not enough —most often it isn't even read, let alone evaluated. Some committee members will only look at the bottom line, the total dollar figure, without understanding what it is meant to provide. Approval can best be obtained if you can illustrate your needs clearly and simply. Photography can help.

Often a golf superintendent feels uneasy standing and talking before a group. A carefully prepared slide show can serve as a crutch to those who freeze at a presentation and forget important details. Projecting pictures and charts on to a screen helps make this task easier. After all, "A picture is worth a thousand words".

How well you plan your presentation is the key to the success of your slide show. First and foremost you must clearly define your objective. What do you want your audience to do after seeing your presentation? Obviously, it is to understand clearly your plans and ideas and to convince them to allocate the necessary funds for their implementation. If the Greens Committee approves your proposals, then you know that your presentation was a success.

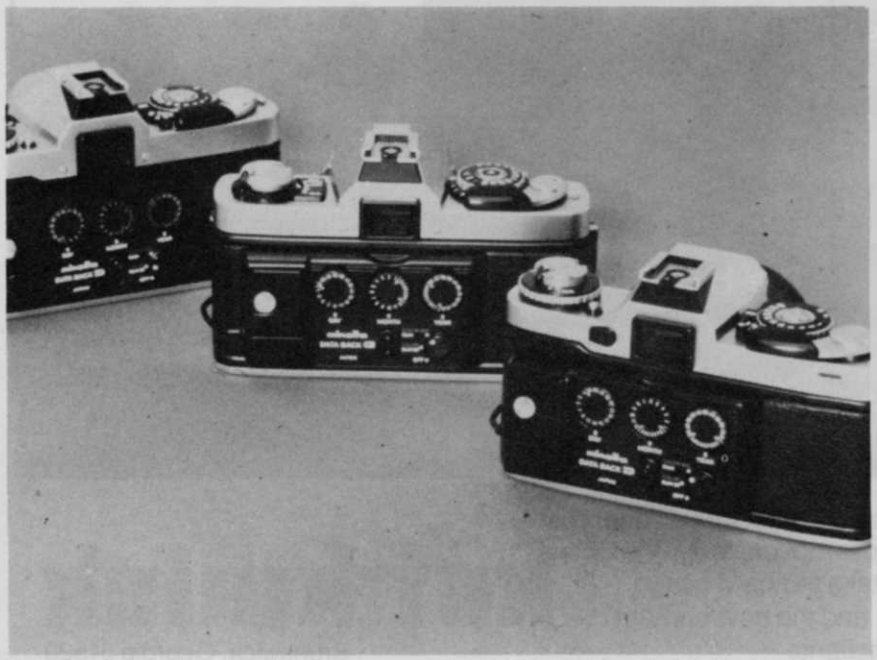
You must analyze your audience. How much do they know about the various grasses, machinery and construction in general? You must consider their backgrounds before making your presentation too technical. You must gear your show to their level of understanding. A photograph of a sample grass planting which you made showing a side by side comparison (existing and new) will convince a layman better than a verbal description or the claims and photographs of a manufacturer's advertising literature.

Since presentations to Greens Committees are often made at or near year's end, with snow on the ground there is no way that you can take them to the planting site for first hand viewing. Thus, a photograph taken in good weather is absolutely essential.

Before you appear before the Greens Committee, be sure of what you want. Do you know the specific make and model of the equipment that you want? This applies to everything you ask for. The Greens Committee expects you to have researched and finalized your needs. Don't expect them to make this judgement for you. Of course, if they ask you for a less expensive alternate, you should be prepared to offer it.

Color slides provided by manufacturers or supply houses and projected on a screen will provide the image of the equipment that you want and, with a pointer, will allow you to explain its features. You

Continues on page 62



Data back *which records the date on the slide as you take it. To help show changes over time.*

Using tripod *for taking closeups of charts and graphs for slides.*

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must decide what pictures you want so you can take them at intervals to show the effects of the changing seasons. This requires long range planning, taking and collecting the necessary slides. If you are trying various fungicides for disease control, trying a new fertilizer program, or anything else that must show its effect over a period of time, it is advantageous to have a camera that has a "data back" which will record the date right on your slide as you take the picture. They are obtained at your camera dealers as an accessory for about $100.00.

If you do not wish to purchase this item or your present camera will not accommodate this feature, it is well to have a piece of paper with the date written on it in large letters in the foreground of the area that you are photographing. Be sure that you can read the date while looking through your camera's viewfinder. Pictures showing the date that they were taken can be very useful when showing storm damage and the "after" picture showing the repairs made. The same is true for recording vandalism for substantiating insurance claims.

Are you going to use graphs and charts in your presentation? These are available from universities and manufacturers representatives—but not as slides for projection. It is very easy to copy these charts and graphs and make your own slides. You can tape the report, usually 8½ × 11 inches, to a wall outdoors (because of the outdoor color film) with light from an overcast sky and with your lens in the macro mode (see the Nov. issue) you can come in to about 14" and completely fill your frame with your graph or chart. It is best if you come in closer and fill the frame with only the bar graph, chart, curve or table of figures rather than photograph the entire page. In this way the important data is shown as large as possible on the screen for good clear visibility. The type will appear too small to read if you copy the entire page. This also puts too much information on the screen at one time. So, keep it simple. Your points will be easier to put across.

If you do not have a macro lens, go to your photographic dealer and buy a +2 close-up lens attachment which screws into the front of your normal 50 mm lens which came with your camera. When you set your focus setting of your camera at 15 feet, you will fill the frame almost completely with your 8½ × 11 chart. The distance from the rim of your lens to your copy material will be about 17½ inches. If you want to come in closer, set your distance scale to 3½ feet and with a lens to subject distance of 13½ inches, you will cover a field of about 6 × 9 inches.

Although it is possible to hand hold a camera while taking close-ups, the picture will never be as sharp as when you use a tripod. If you copy printed matter it will not be clear and distinct when your slide is projected. If the legs of your tripod get in the way, try tilting the whole tripod forward as shown so that two legs are vertical. But be sure to anchor the third leg on a weight so that the tripod doesn't fall forward. Be sure your camera is perfectly level before you take your picture. I always use a spirit level.

All 35 mm single lens reflex cameras have a built-in exposure system—either automatic or match needle type. However, when photographing a piece of white paper you must over-ride your camera's exposure system and open up your lens about a stop or stop and a half. This is not a misprint! A subject which is predominately white requires **more** exposure, not less. If you expose per your camera's meter without this extra exposure, your white page will appear a dark gray when you project your slide. If you are copying a chart or page in a color other than white, your camera will meter the correct exposure.

A good slide presentation always includes title slides. You can easily make them by using transfer letters which are sold in sheets at art supply stores. They should be 24 point with "bold" lettering and numbers. The letters are printed on a clear sheet of acetate which you transfer by simply rubbing them from the acetate sheet onto your paper. Your titles will be especially attractive if you put them on light pastel colored construction paper. This paper is also available at art supply stores.

Draw a light straight line on your construction paper to help you keep your lettering straight. Position the transfer sheet so that your first letter is where you wish to start printing. Make sure that this letter and all other letters on that row of the transfer sheet are on your drawn line. You can carefully erase it when you are finished and before you photograph your title. Using a pencil or special burnishing tool which art supply dealers sell, simply rub each letter onto the construction paper making sure you have completely rubbed off all of the letter.

The best, most effective titles have a minimum of words. Come in as close to your paper as you can so that the lettering will appear large when you project them. Photograph your titles the same way as with the procedure for charts, etc. described above.

There are other pictures which you may want to include in your slide presentation. You may wish to show an inventory of your equipment showing its condition. You can show pictures of equipment which you would like to have. Manufacturers representatives can usually supply these for you.

Remember that manufacturers, turf dealers and other supply sources can often provide you with slides to fill in any gaps in your presentation. As for the actual slide show, you will need a good slide projector and screen. If none is available, these can be rented by the day. Make sure that the room can be darkened, especially if the meeting is on a Saturday afternoon. A slide show is not enough. You will also want to pass out written copies of your budget, as the Greens Committee will want to have something to carry out with them.

No matter how important you feel that the message in your presentation may be, people are going to judge it on the basis of what they see on the screen. **WTT**

James E. Trigg is president of The Academy of Science and Art of Pittsburgh in Pennsylvania.

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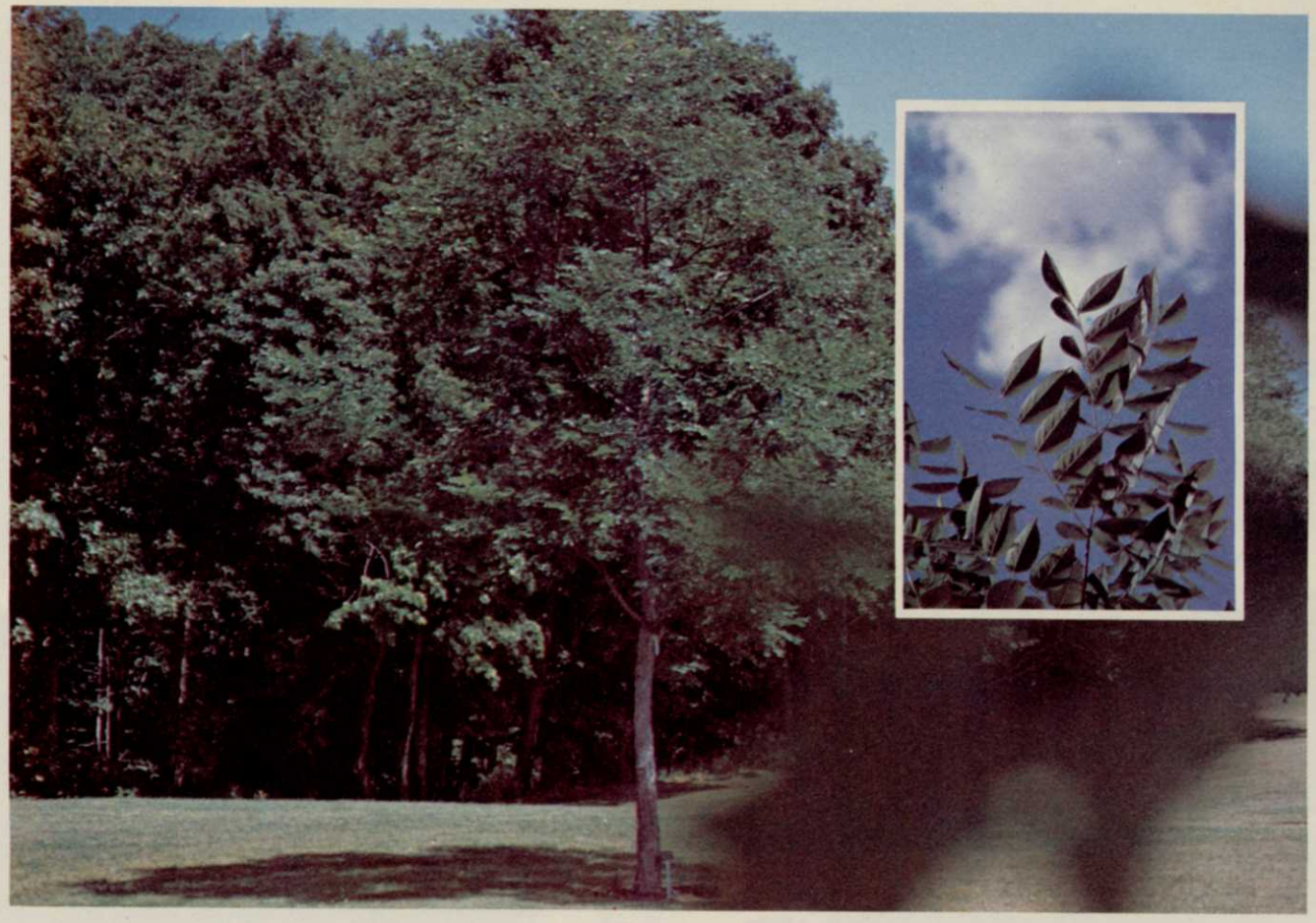

COFFEETREE WORKS WELL AS CITY TREE

By DOUGLAS J. CHAPMAN

Kentucky Coffeetree (*Gymnocladus diocus*) is an exciting tree that offers potential in parks, as a city street tree or in the individual landscape. It is tolerant of difficult soil conditions, is a good competitor, will thrive when grown in grassy areas and has few or no insect problems.

The habit is somewhat oval-crowned with vertical ascending branches, reaching an ultimate height of 60 to 75 feet with a 35- to 45-foot spread. It is a rather coarse-textured tree with the bark being rough with vertical scaling ridges. It is interesting in that it adds to the coarse texture with a grey to dark brown color.

The 36-inch long, 24-inch wide bipinnately compound leaf is extremely coarse in texture. In the spring as it comes out, it is a very pale green, changing to dark green mid-spring to a blue-green in mid-summer. Although some have suggested that fall color is ineffective, in central Michigan we have a good clear yellow developing. The fruit are reddish-brown pods, 5 to 10 inches in length, containing a few large blackish-brown round seeds. The seed pods remain and hang on the trees for the entire winter, adding to its coarse, almost grotesque habit.

Kentucky Coffeetree should be transplanted balled and burlapped deep into rich, moist, fertile soil, but as mentioned above, it is adaptable to a wide range of conditions from a sandy loam to a rather heavy clay-loam found in many urban soils. It is somewhat drought tolerant, therefore, usually thrives in well-drained versus poorly drained soils. Pruning is most effective and causes the least problems when done during early spring.

There are no catastrophic insect or disease problems to affect this plant. It joins a select list of trees well suited as city street trees—Hackberry, Scarlet Oak, Honey Locust, and Common Horsechestnut.

When one is considering a tree for difficult urban conditions which require little or no maintenance and yet has a rough silhouette similar to elm, Kentucky Coffeetree should come to mind. **WTT**

Douglas Chapman is a Horticulturist at Dow Gardens, Midland, Michigan.

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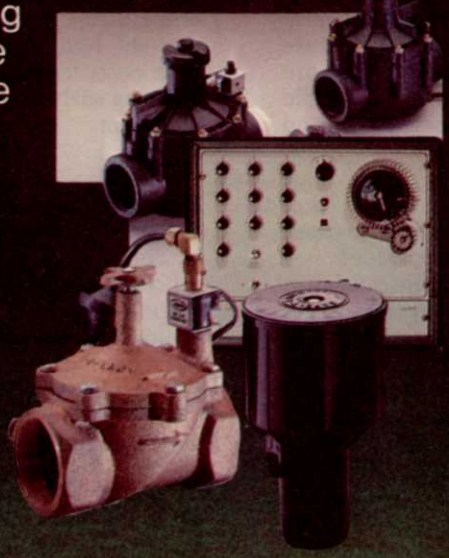

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Circle No. 141 on Reader Inquiry Card

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: *What can you tell me about an environmental disease called red belt? (New York)*
A: Red belt of needle-leaved conifers occurs most frequently when a sudden temperature drop during the winter months follows an unseasonably warm spell. Needles turn reddish or brown as the tissues become plasmolized and desiccated, then die. A distinct "belt" of injury occurs when warm air sweeps across mountain tops without mixing with the cold air in the valleys below. Rapid warming and drying occur along this belt. At night the border between the two air masses infuses with cooler air, subjecting the trees in the border zone to alternating warm and cool temperatures. Often these belts or bands of damaged trees are so sharply defined that only the tops of trees are affected at the lower edge of the damage zone while only the lower parts of the trees are affected at the top of the zone.

Q: *I have been told that natural gas is not toxic to trees, yet a gas leak can kill trees. How is this possible?*
A: An extremely low oxygen content may be caused, in part, by the displacement of the soil air by the leaking gas, but more so by intensive oxygen consumption as a result of methane oxidation. (Methane is the primary component of natural gas.) Methane-consuming bacteria multiply in methane-contaminated soil, using up the oxygen and giving off carbon dioxide. In a normal soil in which there is no natural gas, there are few or no methane-consuming bacteria. Therefore, just after the start of a gas leak, the rate of oxidation of methane is slow. However, after a period of time the methane-utilizing bacteria increase and, in turn, the concentration of oxygen in the soil decreases.

Q: *How can one tell if an oak is infected with Hypoxylon canker? What is the latest information on control? (Texas)*
A: Hypoxylon canker can be identified by the dark-colored, crusty fungus tissue on the dead cankered area. Large pieces of bark may slough off, exposing the fungus beneath. Spore masses may vary in color from tan to bluish-gray to black. Willow and water oak appear to be the most susceptible, followed by red oak and occasionally post oak.

Since Hypoxylon canker is primarily a weak pathogen, invading weakened trees, the best form of protection is proper care of your trees.

Protect trees from construction damage, including mechanical wounds, soil compaction, grade changes and fill dirt over the root area. Water trees during drought, fertilize properly and control insect and disease pests to reduce stress. Prune out any branches showing early infection to reduce the amount of spore inoculum.

Q: *Where can I obtain more information on the losses that can be deducted from federal income taxes?*
A: The IRS will accept appraisals made by consulting arborists approved by the Council of Trees and Landscape Appraisers, headquartered at 232 Southern Building, Washington, D.C.

Two pamphlets which are furnished free by the IRS are: Publication 547, "Tax Information on Disasters, Casualties, and Thefts," and Publication 584, "Disaster and Loss Workbook."

Q: *We have a new aphid in our area that causes witches'-broom on honeysuckle. Can this aphid be controlled in the same manner as other aphids, and are there any varieties of honeysuckle which are not affected? (Illinois)*
A: The aphid *Hyadaphis tataricae* damages the terminal growth creating a weak, spindly "witches'-broom." The stunted terminals have tiny, folded leaves as a result of the aphid feeding. The small green aphid was first noticed in 1979 and has now spread thoughout northeastern Illinois.

Tatarian (*Lonicera tatarica* Zabel) and Amur (*Lonicera maachi*) honeysuckle are particularly susceptible, but the aphid has also been reported on *Lonicera bella, L. mune- deniensis, L. conjugialis, L. minutiflora, L. morrowi, L. amoena, L. reprectiana,* and it may affect other species. Dwarf honeysuckles apparently are not affected.

Control is the same as for other aphids. Spray overwintering eggs laid low on the plant with dormant oil. Control aphids which appear during the season with malathion, forcibly sprayed to penetrate the curled leaves.

Send your questions or comments to: Vegetation Management c/o WEEDS TREES & TURF, 757 Third Avenue, New York, NY 10017. Leave at least two months for Roger Funk's response in this column.

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WT&T

EVENTS

The current issue of WEEDS TREES & TURF carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 757 Third Ave., New York, NY 10017.

Mid-Atlantic Nurserymen's Trade Show, Baltimore Convention Center, Baltimore, MD, **Jan. 18-20.** Contact Mid-Atlantic Nurserymen's Trade Show, Perry Hall, MD 21128, 301/256-6474.

52nd Annual Michigan Turfgrass Conference, Longs Convention Center, Lansing, Michigan, **January 19-20, 1982.** Contact: Paul Rieke, Dept. of Crop and Soil Sciences, Michigan State University, E. Lansing, MI, 48824. 517-355-0266.

Twentieth Nebraska Turfgrass Conference and Trade Show, Holiday Inn, Omaha, NE, **Jan. 19-21.** Contact Robert C. Shearman, Turfgrass Specialist, 377 Plant Science Complex, University of Nebraska, Lincoln, NE 68583, 402/472-2550.

Michigan Association of Nurseryman Convention and Trade Show, Grand Rapids, MI, **Jan. 20-21.** Contact Richard Ahti, P.O. Box 26008, Lansing, MI 48909, 517/394-0236.

Massachusetts Horticultural Congress, Dunfey's Hyannis Hotel, Hyannis, MA, **Jan. 20-22.** Contact Deborah Fanning, Massachusetts Horticultural Congress, 715 Boylston Street, Boston, MA 02116, 617/266-6800.

Associated Landscape Contractors of America Annual Meeting & Trade Exhibit, Hilton Riviera, Palm Springs, CA, **Jan. 24-29.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

New York Turf & Landscape Association, Long Island Gardeners Association, Hudson Valley and Long Island Cooperative Extension Service, Annual Turf and Landscape Conference, Tappan Zee Inn, Nyack, NY, **Jan. 27.** Contact Frank Claps, 136 Laurel Avenue, Larchmont, NY 10538, 914/834-6846.

Winter National Hardware & Home Center Show, Las Vegas Convention Center, Las Vegas, NV, **Jan. 30-Feb. 1.** Contact Winter National Hardware and Home Center Show, Cahners

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...and drain too much or too little water, and you've got problems!... unless you use Aqua-Gro the rootzone water management tool.

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Plaza, P.O. Box 3833—999 Summer St., Stamford, CT 06905, 203/964-0000.

Twenty-Seventh Annual Southwest Park and Recreation Training Institute, Lake Texoma Lodge, Kingston, OK, **Jan. 31-Feb. 3.** Contact James W. Kitchen, Institute Director, Department of Park Administration and Landscape Architecture, Texas Tech University, P.O. Box 4169, Lubbock, TX 79409, 806/742-2858.

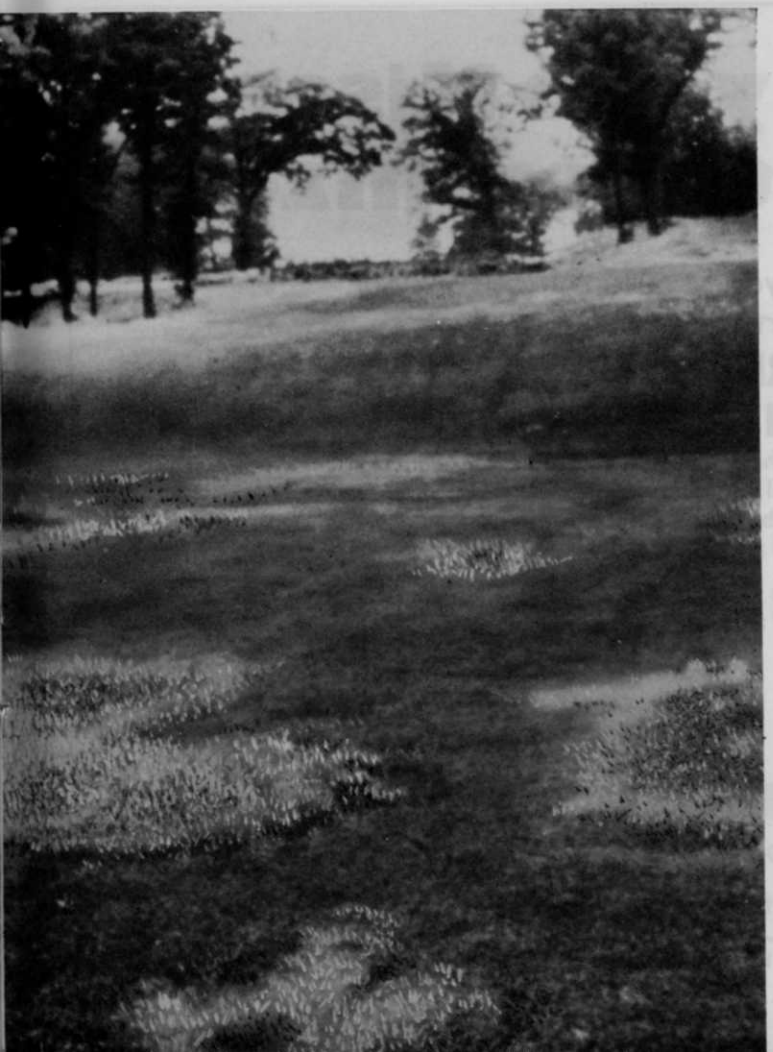
Park and Recreation Maintenance-Management School, Wilson Lodge/Oglebay Park, Wheeling, WV, **Jan. 31-Feb. 4.** Contact Alice Strickland, North Carolina State University, Division of Continuing Education, P.O. Box 5125, Raleigh, NC 27650, 919/737-2261.

GCSAA International Turfgrass Conference and Show, New Orleans, LA, **Jan. 31-Feb. 5.** Contact Golf Course Superintendents Association of America, 1617 St. Andrews Drive, Lawrence, KS 66044, 913/841-2240.

Weed Science Society of America, Annual Convention, Boston Park Plaza Hotel, Boston, MA, **Feb. 7-11.** Contact WSSA 309 West Clark Street, Champaign, IL 61820.

National Arborist Association 1982 Annual Meeting, Maui Surf Hotel, Maui, Hawaii, **Feb. 14-18.** Contact National Arborist Association, Inc., 3537 Stratford Road, Wantagh, NY 11793, 516/221-3082.

Nursery Marketing Council



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Circle No. 102 on Reader Inquiry Card

News *from page 18*

LANDSCAPE

IBDU fertilizer used to revegetate Mt. St. Helens

In an attempt to revegetate Mt. St. Helens, the Washington State Soil Conservation Service has begun applying non-bacteria dependent fertilizer.

The fertilizer, IBDU, is a slow-release nitrogen fertilizer that does not depend on soil bacteria to work. Efforts to revegetate the area with conventional fertilizers have been unsuccessful. According to SCS sources, there apparently is not sufficient bacteria in the volcanic debris to activate conventional fertilizers.

IBDU was applied along the banks of the Toutle and Cowlitz rivers which were ravaged by lava and mudflows. Approximately 70 tons of IBDU was used to treat 1000 acres.

For the past 16 months the SCS has been involved with revegetation attempts to control erosion on the 200,000 acres in the erosion zone caused by the blast. The SCS estimates 380 tons of soil per acre per year will be lost to erosion on the land compared to the national average of 4.2 tons of soil erosion on disturbed forest land.

The SCS expects IBDU to remain in the soil for six months after the initial application, which should allow the vegetation to develop sufficient root systems to control erosion. IBDU is marketed by PAR EX Professional Products division of Estech.

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NEW. IMPROVED. AND STILL FREE.

The first edition of the Elanco Vegetation Management Guide got rave reviews. Vegetation managers across the country liked the information on new vegetation management practices. They liked the news on new product developments. They liked the "how-to" application and treatment information.

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But as much as they liked the original, they'll like the new, updated Vegetation Management Guide even better. It's been revised to include the latest developments in the industry. And special emphasis has been placed on the specific problems encountered by railroad, utility, and highway/county road vegetation managers.

But the one thing we couldn't improve was the price. So we left it the same: FREE.

To get your copy, just fill out the information below, then tear out the page and send it to: Elanco Vegetation Management Guide, Elanco Products Company, Dept. E-170, Indianapolis, IN 46285, U.S.A.

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Circle No. 114 on Reader Inquiry Card

PRODUCTS

Vandermolen Corp. has introduced its new WINDMILL 8-11 Wheeled Blower, powered by a 2 cycle Kawasaki

engine with electronic ignition. The 41 lb. blower generates a high pressure air blast of 225 mph. Its lightweight and pneumatic rubber tires are designed for easy maneuverability on steep slopes and uneven surfaces.

Circle No. 160 on Reader Inquiry Card

Glenmac Inc.'s Harley Stone Removal equipment is designed for optimum results when fine cleaning trash and rocks for seed bed preparation on new golf courses. According to the manufacturer, the equipment will sanitize down to ½-in. and can clear from 5-15 acres per day. Glenmac offers the rock picker for sale or will contract for site preparation.

Circle No. 161 on Reader Inquiry Card

"Little Squirt" by Aquatrols Corp. is a new irrigation unit which allows for the injection of liquid concentrates directly into the irrigation system. The unit has the capacity for a wide range of application rates from less than one-ppm to 46-ppm at a standard irrigation flow rate of 600 gpm.

Circle No. 162 on Reader Inquiry Card

Trevennor Inc's AER-CORE aerifying fork has been designed to solve soil compaction problems and promote drainage without the need for expensive and bulky equipment. The AER-

CORE features three 6-in. x ½-in. tines which automatically eject aerification cores and minimize clogging.

Circle No. 163 on Reader Inquiry Card

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MODEL 21165

Commercial Sprayers for Farm and Industry

65-Gallon polyethelene tank. Powerful single cylinder pump. Handles all types of pesticides, herbicides, soluble fertilizers and disinfectants. Can be converted to trailer hitch mount.

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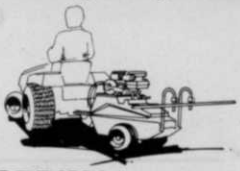
This single cylinder, medium pressure sprayer features a trailer hitch for attachment to garden tractors. It also comes with orchard gun which adjusts from steady stream to fine mist. The sturdy polyethylene tank is noncorrosive and lightweight.



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Club Car's 1982 DS Model golf cart features reduced weight, a tighter turning radius, a more streamlined bag

rack, and shock absorbers on all four wheels. The improvements are designed to lower operating costs, improve suspension and increase manueverability.

Circle No. 164 on Reader Inquiry Card

The Andersons Lawn Fertilizer division has unveiled a concentrated benefin product for the control of crabgrass. Pel-Tech Benefin Concentrate 10 is a sprayable, pelletized formulation utilizing a pre-emergence

Continues on page 77

Finding a home for a giant 10-year old, 12,000 lb. tree.

It takes a very special machine. Powerful. Mobile. Reliable. But, most of all, gentle. The Vermeer TS-84 is all that and more. It transplants big trees in minutes. Trees with trunk diameters up to 8 inches! Six, powerful, high-tensile steel spades do it all. Hydraulically. Easily. Instant shade. You'd expect that. After all, Vermeer invented the tree spade! Ask your Vermeer dealer for a demonstration.

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Circle No. 149 on Reader Inquiry Card

MILORGANITE

Take another look at fertilizing nature's way with MILORGANITE

If you haven't done so recently, take another look at fertilizing nature's way with Milwaukee's Organic Nitrogen — MILORGANITE. It has been used successfully since 1926. That's a 55 year history of superior performance. MILORGANITE's nitrogen release follows soil bacterial activity. In the North, release is slow to non-existent in cold weather or under water-logged conditions. It peaks with the moderate temperatures of early summer, slows with excessive summer heat, and rejuvinates growth with moderating temperatures of fall. In the tropics release is assured anytime of the year that moisture is adequate to support growth.

Maybe you're having second thoughts about the agronomic value of synthetic UF, IBDU, SCU nitrogen release — *and cost.* If so, you are not alone. No matter how hard the scientists have tried, they have failed to match synthetic nitrogen release with natural growth patterns.

SOME OF THE PROBLEMS

Take IBDU as an example. Its water solubility increases by ⅓ from 40 degrees to 80 degrees Fahrenheit. This might not be too bad for warm-season grasses, although it does mean the long lasting qualities are reduced. However, it could be disastrous to cool season turfs where reduced, rather than increased, nitrogen availability is wanted during hot weather.

Sulfur coated urea (SCU) has the same problem. As temperatures increase, water becomes a better solubilizing agent, thus promoting faster — sometimes much too fast — release.

Ureaformaldehyde (UF), on the other hand, calls for a sizeable investment in product, time and wonderment (up to two years) while waiting for nitrogen supply from the more slowly available UF to stabilize to adequate growth rates. The more soluble methylene diurea doesn't last as long and has a greater tendency to burn.

THE COST FACTOR

Cost is yet another factor with the synthetic nitrogens. They have gotten so high that they are seldom sold in pure form. They are instead included in mixtures with fast acting urea (the inferior source in most comparison charts) and often potassium and phosphorus, as well. This lowers the analysis but increases the "burn" potential.

Interestingly, the comparison charts and graphs point out the superior nitrogen release and low salt index of IBDU and UF when compared to urea, yet the sales push is for the 24-4-12 or similar mix. In a 24-4-12 example given by the IBDU folks, 55% of the nitrogen is water soluble, whereas only 15% of IBDU Fine falls in this category. And, granulation does make a difference. Coarse IBDU has 1.6% less water soluble nitrogen than the Fine. And the fines react much faster.

Milorganite is more than just a simple source of nitrogen.

Just maybe it isn't only the s-l-o-w nitogen release that does the job. MILORGANITE makes available every element known to be needed by grass in the same controlled release way. MILORGANITE includes some potentially fungicidal properties as well. Could it be MILORGANITE's cadmium content? Just maybe it's because MILORGANITE supplies nutrients the way plants want them.

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Circle No. 126 on Reader Inquiry Card

herbicide, designed for easy mixing and application. The 35% nitrogen

urea carrier contained in Pel-Tech adds fertilizing properties to the product.

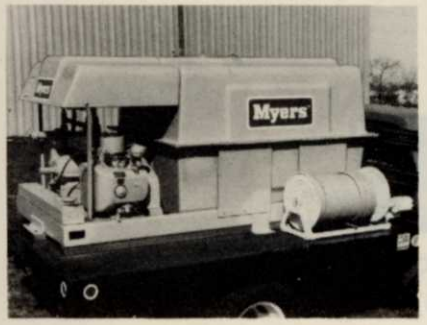
Circle No. No. 165 on Reader Inquiry Card

Richway Industries Ltd. has introduced its TF-4 Foam Marking System. Designed for reduced maintenance

over their previous model, the new system was developed to ensure a simple and efficient method of operation.

Circle No. 166 on Reader Inquiry Card

F.E. Myers Co.'s new 500 gallon Sprayer Series are equipped with fiberglass tanks, built-in baffles and



splash-proof mechanical lock down lids. Frames of heavy-duty steel channel with steel tank supports have been developed to help cradle and protect the tank. Models available include 7- and 23-hp gasoline engines.

Circle No. 167 on Reader Inquiry Card

Roseman Mower Corp. has introduced a seven-gang, pull-type, hydraulic drive reel mower with a 15½-foot swath cutting capacity. Utilizing a

tractor power-take-off system to charge the cutting reels, the model includes finger tip controls from the tractor seat to engage and disengage the reels.

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mott HAMMER KNIFE

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Mott Flail Mowers are built to last and can be used with most tractors. Models are available in widths from 38 to 88 inches. In combination, they will handle up to 19 foot swaths.

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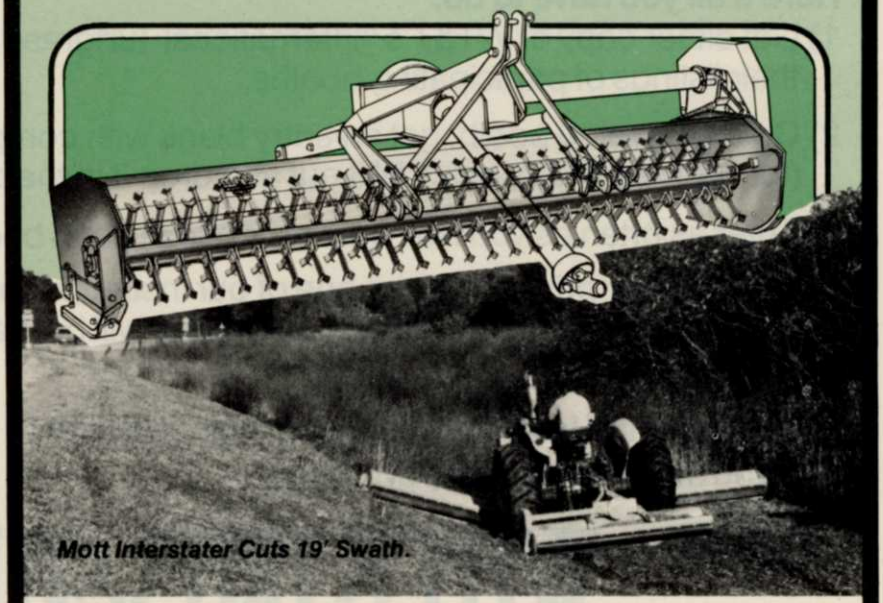

Mott Interstater Cuts 19' Swath.

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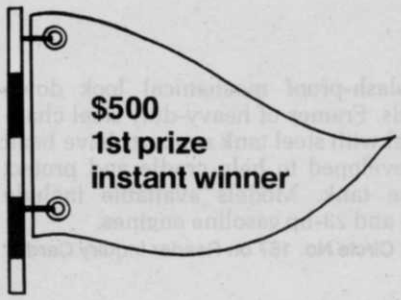

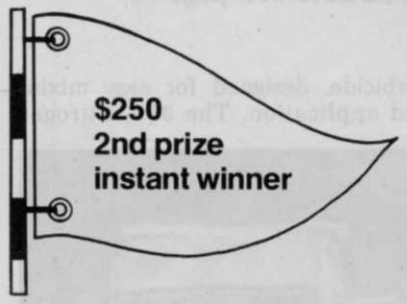

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1) Get either copy of WT&T's "International Turfgrass Show Dailies" with their listings of participating booths.

2) Go to any listed booth, get an entry blank with complete rules/details (for non-exhibitors only), fill it out and drop it in the ballot box.

3) Enter as often as you like, but only once at each booth.

4) Pick up your prize—if you're one of our instant winners—and have your picture taken at the winning booth. Prizes will be mailed if winners are not present.

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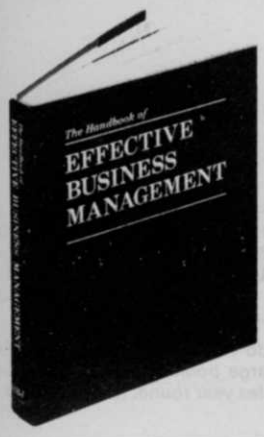

- **Struggle to develop a realistic budget? If so, see page 88.**
- **Hire or fire an executive? Then see page 279.**
- **Attempt to boost productivity while lowering energy consumption? See page 343.**
- **Use breakeven analysis as a competitive weapon? See page 239.**
- **Seek professional advice from an accountant, lawyer, banker or outside consultant? See page 14.**
- **Weigh foreign exchange risks before conducting business abroad? See page 40.**
- **Find your company caught in a product liability crisis? See page 370.**
- **Research the goals and needs of your customers? See page 228.**
- **Initiate an effective production inspection system program? See page 339.**
- **Try to market yourself for a new job? See page 151.**
- **Be called upon to make a formal presentation? See page 95.**

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The Handbook of Effective Business Management, a business reference book published by the editors of HBJ Newsletters, Inc., a subsidiary of Harcourt Brace Jovanovich, will provide you with concise business advice you need—when you need it. Keep it handy...in your office or personal library. And USE it! When wrestling with a sticky business problem... when taking on a new responsibility... when confronting a fresh business opportunity.

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Completely overhauled and dielectrically insulated 45' Sky-Workers—For Sale and Rent. 90 day guarantee on sales. Call Aerial Lift, Inc., Milford, Conn. (203) 878-0694. TF

Continues on page 85

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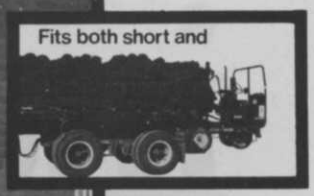

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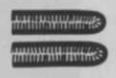
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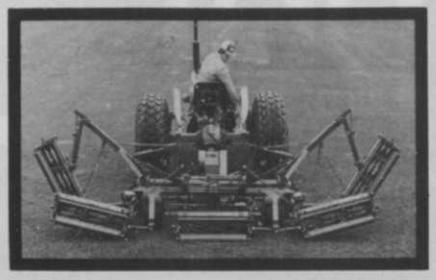

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BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a gcm course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15553 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

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60' TELESCOPIC BUCKET TRUCK & CHIPPER, will load 2000 lbs. logs into hinged top dumping chip box. Includes large tool compartments, 110 V. generator and 4 cyl. 12" Asplundh Chipper. A-1 condition. All for only $12,500.00. Photo's and spec's to interested parties. Schmidt Tree, 955 - 25th Court, West Palm Beach, FL 33407. 1 (305) 832-8292. 1/82

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FMC 20 gpm, 500 psi, 300 gallon trailer mounted sprayer: electric reel and starter, 300 ft. ⅝" hose, Bean 785 gun, 11 hp engine, very good condition. $3300. Firm. (216) 247-7866. 1/82

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FOR SALE: 1975 Brower Sod Harvester, $14,000; 1975 Ford Sellick Fork Lift, $11,000; 1975 Hyster Lift Truck, $12,000; all in excellent working condition, will deliver free anywhere in U.S.A.—(216) 338-3008 days, (216) 564-7882 evenings. 2/82

Continues on page 86

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GROUNDS MAINTENANCE SUPERVISOR: Must be totally familiar with all phases of landscape maintenance. Responsible for training foreman in safety, crew organization, and quality control. Must have 2 years field experience. Salary commensurate with experience. Send complete resume with references to: Maintain Incorporated, 2549 Southwell, Dallas, Texas 75229, Attn: Branch Manager. Openings in Dallas and Houston. 1/82

Nationally known lawn care firm needs branch manager to supervise in the servicing of over 1800 accounts. We need a take-charge person capable of overseeing our entire operation. Unlimited opportunities for the right person. Supervisory experience is necessary. Knowledge of the lawn business is not a requirement. Send resume and salary requirements to Lawns —P.O. Box 198, Morrisville, PA 19067. 2/82

HORTICULTURE INSTRUCTOR/ ASST PROFESSOR

To teach intro to plant science, plant propagation, greenhouse management, shade tree maintenance, plus other horticultural courses. Master's degree in plant science or horticulture plus 2 years field experience is required. Teaching experience is desirable.

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SUNY/Agricultural & Technical College
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LANDSCAPE DESIGNER—SALESMAN: Established, growing firm located in Texas Panhandle engaged in landscape and sprinkler design and installation seeking aggressive, capable, career person. Degree desirable; experience necessary. Ground floor opportunity. Send resume and references to Amarillo Landscape, Rt. 4, Box 299A, Amarillo, Texas 79118. (806) 622-0173. 1/82

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HELP WANTED: MANAGER for Landscape Maintenance Department of Central Texas firm. Must have sound background in hiring, training, and supervising maintenance personnel. Salary, Company Vehicle. Send resume to WTT Box 282. 1/82

Expanding eastern Pennsylvania landscape/tree care company, is looking for good sales people. Groundfloor opportunity for a take-charge person. Income opportunities unlimited for the right people. Rusk Landscaping, Ltd., P.O. Box 91, Levittown, PA. 2/82

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WANTED — a good used straw blower. (918) 366-8930. 1/82

WANTED — good used tree sprayers. Pumps 40-60 gallons per minute. Wisconsin Engines. Spray tanks 600-1000 gallons. Call Mr. Spray, Livingston, N.J. (201) 992-0262. 1/82

Jari Model Y underwater weed cutter or Air-lec aquatic weed cutter in good condition. Write: Connwood, Inc., P.O. Box A, Rockfall, Connecticut 06481, or call (203) 349-9910. 1/82

Continues on page 88

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MISCELLANEOUS

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CHALLENGING CAREER. Above average pay. Two year associate in applied science degree in golf course operations/Landscape technology. Financial assistance available. Write Western Texas College, Snyder, TX 79549. (915) 573-8511. 2/82

THE NEW YORK BOTANICAL GARDEN SCHOOL OF HORTICULTURE—An intensive 19-month program combining academic classes with practical work to train professionals in the field of horticulture. Curriculum includes botany, horticulture and landscape design, with work experience at both the Botanical Garden in the Bronx and at the Cary Arboretum in Millbrook, NY. Licensed by the New York State Education Department. For further information contact: Rosemary Kern, Education Department, **THE NEW YORK BOTANICAL GARDEN**, Bronx, New York 10458. (212) 220-8739. 2/82

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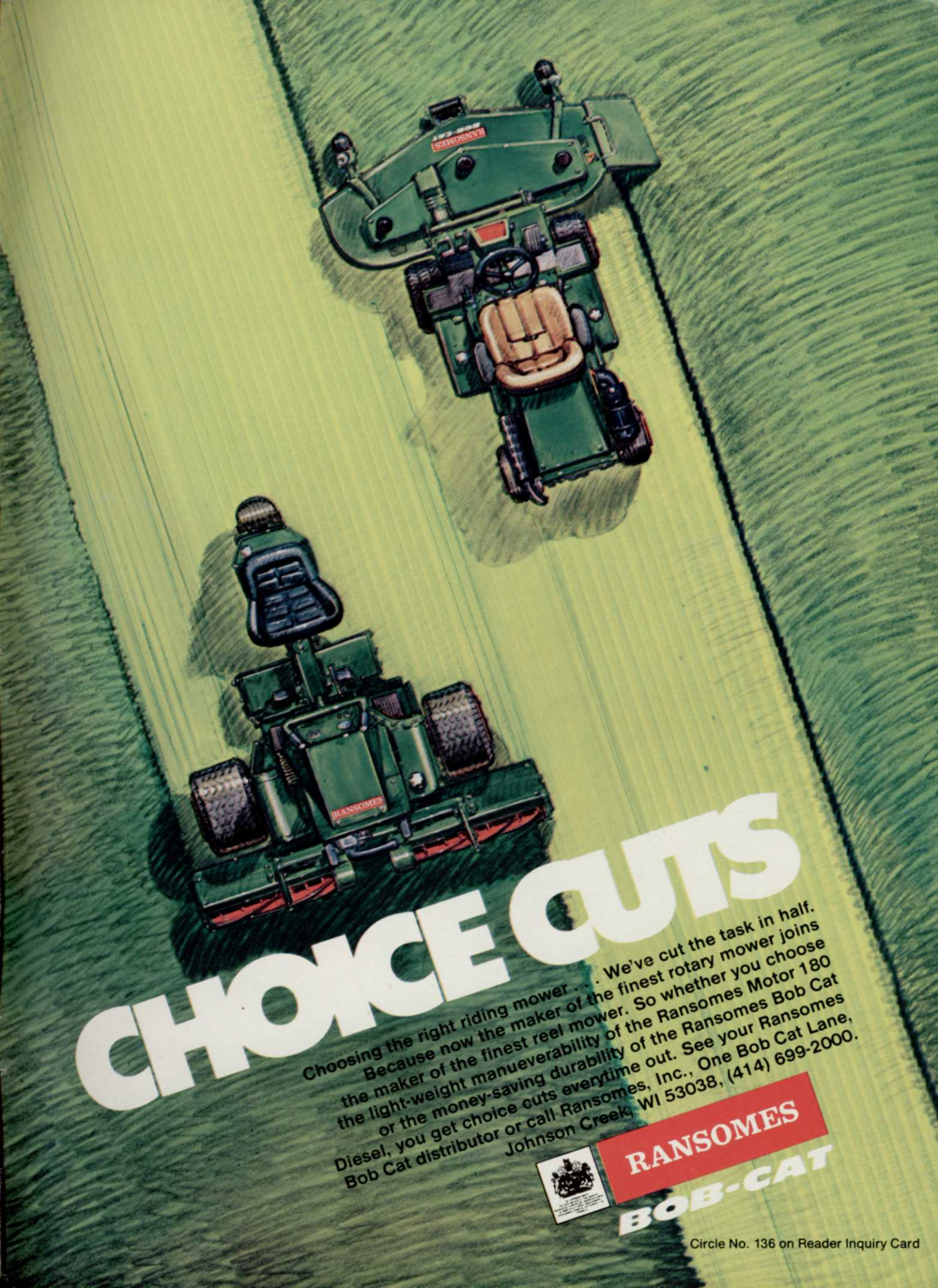
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